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A FORTNIGHT ON THE FARALLONES.

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A DUSKY group of naked, stony peaks on the horizon, set in a summer sea against a cloud-strewn sky, was our first view of the Farallon Islands, near noon on May 27, 1904. Charles A. Love, Oluf J. Heinemann and the writer had left San Francisco at seven o'clock in the morning on the trim little seventeen-ton gasoline schooner 'Jennie Griffin,' which makes bi-weekly trips. As we neared the islands birds became more and more numerous; bands of cormorants, strung out in Indian file, passed us, and flocks of murres dove or splattered over the water from the ship's side. With a retinue of cackling gulls above us or trailing in our wake, we entered, at half past one, the picturesque harbor, walled in by towering cliffs, rocky arches and jagged islets, prosaically named Fisherman's Bay. Amid the rising clouds of bird life, startled by our whistle, we dropped anchor, and after a short row ashore and a flat-car ride of half a mile, drawn by the famous island mule, 'Patti,' we arrived at Stone House, a comfortable two-story structure of spotless white, of which we were given possession. With all the eagerness that characterizes the naturalist in new territory we partook of a hasty lunch and set forth to explore the greatest of western bird rookeries.

After the discovery of gold in 1849 the fast increasing commerce of the 'Bay City' necessitated the installation of a light-house on these islands, as they lie due off the harbor. The

light is of the first order and the most important on the coast, and is zealously tended by the four keepers from sunset to sunrise, in three-hour watches. The light tower is perched on the summit of the islands and is reached by a winding path that zigzags along the steep bluffs. When the heavy gales blow the keepers are often forced to crawl on hands and knees in the unsheltered places. Their homes, two two-story frame buildings, are on the level tract on the south side, and with Stone House, numerous outbuildings and the fog-station, have the appearance of a small hamlet. The wireless telegraphy station and Weather Bureau observatory, with its varied appliances for registering the atmospheric conditions, are situated on the Jordan, a third of a mile distant. Mr. E. C. Hobbs, the head official, very kindly allowed us the use of his dark room at will.

The resident population at present numbers twenty, more or less increased by visitors, and the register shows a strange assemblage of names — Greek fishermen, pilots, government inspectors, artists who have ventured out here to portray on canvas the wild beauty of these strange islands, and hosts of photographers whose views innumerable lie on the head-keeper's parlor table. Among these, in a class by themselves, were some by the late Chester Barlow, and, likewise distinctive, a number of inimitable bird-sketches by Louis A. Fuertes, who made a recent visit.

The islands lie about thirty miles west of San Francisco, and are divided into two groups. The North Farallones, or North Rocks as the islanders term them, lie seven miles to the northwest and, compared with the main group, are small and unimportant. Midway between lies lonely little 'Four Mile Rock,' also known by the misleading title of the 'Middle Farallon.' The southern cluster comprises South Farallon, the main island, Sea Lion Islet, Finger and Arch Rocks, easily reached by planks, and Saddle Rock and Sugar Loaf by boat, besides a number of minor islets. (Plates XXIII and XXIV.)

South Farallon, or Southeast Farallon as it is also called, is a mile long, from a quarter to a half a mile or more wide, and three and a half miles in circumference. A rocky backbone runs the entire length, more or less broken by gorges and by a narrow seastream, the 'Jordan,' which separates a portion known as West

FINGER ROCK.

End, and which has been recently spanned by a substantial bridge. The highest points are Light Tower Peak, 345 feet elevation, on the east, and Main Top, 225 feet, on the west. The slope from the ridge to the water's edge is in places so precipitous as to preclude foothold, in others running out into broad rocky or grass covered flats, with now and then a sandy beach. The tireless waves have hewn all manner of curious caves, arches, fjords and basins in the rocky shore. There are caves inland as well, one extending far under Light Tower Peak. The base rock of the islands is a dark, rather soft granite, except Sugar Loaf, which is a mass of conglomerate. The soil, in some places of considerable depth, though confined to the more level slopes, is guano mixed more or less with granite sand, which latter, with broken shells, forms the beaches.

Rain is the only potable water, and is caught in a broad cement shed and stored in cool reservoirs and tanks. A spring of amber colored mineral water bubbles up within a few feet of the breakers, which has the remarkable flavor of unsweetened lemonade. A superficial examination showed the principal mineral ingredients to be sulphates of alumina and iron.

With the exception of a grove of twenty Monterey cypress trees in a protected situation the vegetation is limited to several varieties of clinging weeds, viscid rock-flowers, moss and the hardy grass which clothes some of the flats and slopes. The surrounding islets are all precipitous with little or no plant life.

The climate is rather cool, with frequent high winds. The first seven days of our stay the weather varied from clear to cloudy, with little wind and a calm sea, in fact perfect weather. June 3 a strong northwest wind sprung up, with a maximum velocity of fifty-two miles an hour on the level and close to seventy on the peak. During the next two days we again had pleasant weather, and then on June 6 and 7 the wind blew from twenty-eight to forty-two miles an hour, but moderated more or less the last four days of our stay. We had fog but one night, June 1, when five hundredths of an inch of moisture fell, and our sleep was punctuated by the fierce blasts of the steam fog-whistle. Except on the lee side, the high winds prevented good results with the camera, but as these were only occasional we had but little difficulty in taking our six dozen pictures.

Mammal life is not unrepresented on these sea islands. Great bellowing herds of ponderous sea lions make their home on Saddle Rock and Sugar Loaf, and whether floundering clumsily up and down the rocky slopes or moving quietly along the shore line, these huge amphibians were a continual study. According to the residents the young sea lions have a strong aversion to water and frequently wander far inland on the main island. Rabbits, said to be of Australian breed, abound on South Farallon. They inhabit burrows on the hillsides and when surprised often scamper, in their hurried efforts to hide, into some small nook or crevice from where they can be pulled out by the hand.

The following is a list of the breeding birds observed:

1. Lunda cirrhata. TUFTED PUFFIN.

To see that most curious bird, the puffin, with its massive bill and the yellow curls that adorn its head, in its summer home is alone well worth the island trip. We first encountered this brownish, short-tailed species of bat-like flight on the day of our arrival, just off the harbor, and from its striking features we were able to identify it at a glance. We found them nesting abundantly over nearly the entire island, from the sea level to the crest, and at Puffin Slope, between North Landing and Tower Point, the hillside is simply honeycombed with their burrows; I have counted as many as forty-three birds sitting on the rocks about the entrances. There is also another large colony on the slope opposite Murre Rocks, on West End. The holes ran in from one to five feet, some being dug in the soil among the rocks while others were natural cavities in the cliffs and ledges or under boulders. A number were unlined, but most of them were scantily lined, and in a few the single egg was partly buried in a heap of weeds. During our visit we found both fresh and partly incubated eggs, the former predominating. The majority were but very faintly marked, and those wreathed with jerky lines of lilac and tan were rare exceptions. All eggs except those just laid were more or less discolored by contact with the damp soil and other surrounding material.

Its white face and light colored bill rendered the puffin easily

distinguishable in the semi-dark burrows. Some birds took flight on our approach, while others left the egg and crawled further back in the tunnel, offering no resistance; but the majority refused to stir and sat quiet and motionless, although that keen-edged tool, their beak, was ever active, and not until I attempted to reach an egg did I fully appreciate its formidableness. If a stick or other object is thrust within its reach it hangs on with the tenacity of a bulldog, only letting go when its mouth is pried open. On West End, one day, I beheld two puffins so vigorously battling that they were oblivious to my presence; and Mr. Cane informed me that he once saw two birds begin fighting in the air, above the light tower, and they continued to fight while descending, and even after they reached the water.

On one occasion I chased a rabbit to a burrow among the rocks, but the animal had scarcely entered when out it quickly jumped. I looked in and there, sentinel-like, stood the puffin on guard with a bill full of 'bunnie's' fur.

The statement that "they are among the most noisy of the sea birds, always screaming while out on the rocks and constantly growling while in their burrows,"[1] I consider erroneous as we found the puffin a very quiet bird. Although the 'sea parrot,' as this species is also called, is a good flier and can rise from the ground with ease, yet when the heavy winds were blowing I noticed scores crouching flat on the rocks. On foot this bird is about as ungainly as most of its tribe and has a ridiculous straddling gait.

2. Ptychoramphus aleuticus. CASSIN'S AUKLET.

One might visit the Farallones in the daytime and unless he investigated their nesting haunts or hiding places, would never know that either the trim, white-breasted auklet or the sooty swallow-like petrels existed on the islands. The nest of the auklet was the first nest we found, as they were common about Stone House, whence we sallied forth on our initial trip, as they were almost everywhere. The single white egg, with a faint greenish

[1] Nests and Eggs of North American Birds, p. 9.

cast, is laid in burrows in the guano from one to four feet in depth, or at like distances in nooks and crannies of the rocks and cliffs, with rarely any lining, and at all elevations above the sea. The eggs, like those of the preceding species, become much soiled by their surroundings. On our arrival fresh or nearly fresh eggs were the rule and young the exception, while on our departure it was the reverse.

According to my experience this species, when robbed, does not lay again. When pulled off the nest a sticky reddish substance exudes from the bill of the parent, which is no doubt semi-digested food for the young. When released the auklet would frequently run back to the nest while others would fly rapidly out to sea. The young are covered with black down. During the latter part of our stay I found many of the larger young birds alone in the burrows, both parents being away, evidently foraging.

When the islands are wrapped in the darkness of night, the lofty pinnacles of the ridge rise like towers above a battlement, and from their highest point the strong light from the light tower streams across the sky and far out to sea. And now, when all the other birds have retired to roost and the great rookeries are silent, in from the sea and out from their burrows the auklets come by thousands, and with the petrels begin their nightly labor. By the light of a lantern the air and ground seem black with swift moving figures, and their strange yet not unmusical cries mingle into a mighty chorus which, coming out from the darkness, has a weird effect.

3. Cepphus columba. PIGEON GUILLEMOT.

The guillemot is a trim little bird, resembling a pigeon in size, form and plumage, but it lacks the latter's grace on land, moving over the rocks in a clumsy, flat-footed fashion. These birds became more abundant every day during our stay, but they did not begin to lay until the end of the first week in June. We found well incubated single eggs as well as pairs; hence incubation must really have begun although the majority of all the eggs we found were fresh. The nests, merely pebble-lined slight hollows, were located under projecting ledges, boulders, or in spaces

between piles of rocks where they could be seen not infrequently from above. I also noticed a number of pairs nesting under the wooden platform that overhangs the rocks at North Landing. It is usually several days after laying the first egg before the bird lays the second.

Although more wary than most other island species, on several occasions we caught sitting birds on the nest. In fact, firearms are seldom necessary to secure specimens on the Farallones, and then only a rifle should be used, for, according to the head light-keeper, Mr. Cane, nothing frightens the birds on the island like the report of a shotgun, and when it is discharged in a rookery creates a panic. The cry of the guillemot is a peculiar feeble hiss-like whistle, almost inaudible amid the roar of the mighty breakers that come tearing up against the flat, low-lying shore rocks where these birds congregate in numbers.

4. Uria troile californica. CALIFORNIA MURRE.

The murre not only outnumbers all other species on the islands, but all of them combined. On May 28 we found what the head keeper said was the first egg of the season, and he also stated that the birds commenced laying about ten days later than usual this year. Later on eggs became more and more numerous, and during the last week of our stay we noted them everywhere.

The largest rookeries on the main island are in Great Murre Cave and at Tower Point, on East End, on the rocky shelves and terraces below Main Top Peak, and on the dizzy sides, from sea to summit, of the Great Arch, the natural bridge par excellence, on West End. The birds also breed abundantly all along the ridge and in the numberless grottoes along the seashore, while the surrounding islets are covered with them in countless thousands. Great Murre Cave, which runs in from the ocean on Shubrick Point, with its vast bird population, is a wonder to behold. All ledges and projections, as well as the cave floor, were murre-covered, and on our approach the great colony became a scene of animation, with a vast nodding of dusky heads and a ringing concert of gurgling cries. The birds, at first in tens and then in twenties, flew out, or by sprawling and flapping over the rocks and

into the foaming surf, thus gained the open sea (see Plate XXV). Some were terribly thrown about in the breakers but apparently received little injury. On our entrance the main body took flight, with a mighty roar of wings, and so close did they fill the cave that it behooved us to get behind boulders to prevent being struck by them. Many birds still remained in the cave, retreating deep into the branching recesses or, sheep-like, huddled into the corners, where they could be picked up by the hand. The multitudes which took wing would wait, scattered over the water about a quarter of a mile from shore, until the commotion was over and would then come trooping back to the cave.

The murre when caught is by no means a peaceable captive, as anyone who has come in range of its strong, sharp-pointed bill will testify. The closeness of the tiny feathers on the head and neck have the appearance of, and feel to the touch like, a piece of satin. It is a most ungainly bird on land; if put to flight when on some abrupt eminence they can usually gain sufficient momentum to continue; otherwise they scramble, with the aid of their wings, clumsily over the land and boulders, and in their endeavor to hurry frequently strike with force against the rocks.

From my own observations I do not think that in a battle royal the gull with its hooked bill has any advantage over the murre with its stiletto-like weapon, but succeeds in its high-handed robbery by better control of wing and foot and overwhelming numbers. The gulls swoop down when the murres have been flushed from their eggs and secure the booty, or a number by harassing a single bird simultaneously from all sides finally start the egg a rolling. It is amusing to see a bob-tailed, erect, soldier-like murre with an egg between its legs and a single swaggering gull endeavoring to secure it. Every time the gull cranes its neck forward for the egg the murre also bends with a vicious snap of its bill, which the gull is wise to dodge; and thus the birds will keep salaaming, like two polite Japanese, until another gull comes to aid its fellow or, unaided, the bird gives up the attempt. The cave colonies are the only ones where the murres are secure from persecution by these bird-pirates.

The murre's egg is admirably adapted for the situations in which it is laid, as its pear-shaped form prevents its rolling except

GREAT MURRE CAVE.

in a circle, and the extremely hard shell permits of much rough usage. We found eggs almost everywhere — in inland caves, along the rocky ridges, in damp sea grottoes and on low-lying shore rocks — with no sign of a nest, and in places where one would marvel at their perilous position. On the islands where an unlimited series can be seen, with an endless variation in colors and markings, some very grotesque looking specimens can be found, and on some the strange scrawls have a remarkably close resemblance to figures and other designs. The two most easily separable types, those of white and greenish ground color, seem about equal in abundance. Cinnamon colored eggs were rather scarce, and those of pure spotless white were but very rarely seen.

Mr. Cane states that the birds depart in September, leaving with the young at night, returning to the islands in December.

Although the day of professional egging has passed, the islands still ring with accounts of the egg-carrying feats and hair-raising exploits in which, latterly, the light-house crew took the principal part, and which netted them a neat income. An egger's outfit consisted of a blouse-like 'egg shirt,' which, drawn tightly around the waist, held the eggs, often as many as eighteen dozen or more; a pair of 'egging shoes' with soles made of braided rope and tops of canvas, which are still used by the islanders for climbing steep rocks; and lastly a long coil of stout rope for use in the more dangerous places. Two lives have been lost in this risky trade and minor accidents were common. One egger fell off Saddle Rock with a shirt full of eggs and would have sunk with the weight had he not had the presence of mind to begin breaking them on striking the water. When the season started the main and adjacent islands, including Sugar Loaf and Saddle Rock, were gone over and all the murre's eggs in reach destroyed, thus insuring only fresh ones. This and the regular egging days, when the great colonies were flushed, were red-letter days for the rapacious gulls who followed the eggers about in noisy flocks. Mr. Cane stated that on mornings when a late start was made the gulls would become impatient and start a reign of terror in the murre rookeries by themselves. The available territory was divided into two sections, each being worked every other day. There still remain on the island stone sheds where the eggs were stored,

secure from the pillaging gulls, and from which they were shoveled out into the hold of small schooners or fishing boats without packing. Although the great Farallon supply is now cut off, the eggs still find their way, in limited quantities, to the city markets from the rookery at Point Pedro, in the adjacent county of San Mateo.

5. Larus occidentalis. WESTERN GULL.

The gulls are the virtual rulers of bird-dom on the Farallones, and that they live on the best the islands afford those suffering subjects, the murres, cormorants and rabbits, will testify. I felt but little compunction when taking their eggs, for it seemed but just retribution. When a nest was disturbed in the main breeding grounds the parents would set up a loud cry in which the surrounding flocks would join until it became almost universal and continuous. Some of the more pugnacious birds would dart down at our heads, swerving upward at the last moment.

While this bird builds in colonies, so to speak, they are not like those of the cormorant or murre. There is always fighting room between the nests and only the aggregations near Shell Beach, Indian Head, and at Guano Slope on West End, and about Tower Point on East End, could well deserve this term. Besides these places we found them breeding in scattered congregations all along the rocky terrace west of the Jordan, from the shore to the highest points. On the east, in addition to the rookery at Tower Point, we observed a dozen isolated nests at Bull Head Point, near Arch Rock, and about half that number right at the Weather Bureau observatory, where, rewarded for their confidence in man, they brooded unmolested. The great mass of driftwood, thrown up by winter storms, was a favorite spot in the Shell Beach Rookery. We did not, however, observe any of these birds nesting off the main island. (Plate XXVI.)

While they are somewhat wary, many allowed us to come quite close before rising from their nests. The latter are placed in natural basin-like hollows among the rocks, by which they are partially sheltered, although some were in the most open and windy situations. The nest is a bulky structure, composed of various dry

GULLS ON WEST END.

island weeds and grasses, and has about as much claim to ingenuity as those of most sea birds. They vary little in size, averaging thirteen inches across, the cavity being eight inches by four deep. About many of them I noticed small heaps of ejected fish bones. When we arrived nearly all the nests held fresh eggs, and on our departure many young were pipping the shell and several had emerged. We found the eggs, when boiled, to be indistinguishable in flavor from those of the chicken, and they usually formed some part of the daily fare during our two weeks' stay. There being four keepers with their families on the island, the gull colonies have been divided into four routes, visited every other day. These routes are all on the flats or gradual slopes, those on the rugged ridges being left undisturbed. Only single eggs are taken, nests containing more being left, and the average yield of a route is seventy-five eggs. After being repeatedly robbed the birds continue laying until finally they become content to hatch a pair or a single egg, although three is the full set, and in this way the laying season gradually comes to a close, which it was nearing when we left, as we found numerous singles in which incubation was far advanced.

But even when the gulls begin to set their troubles are not over, for, later, many of the 'squabs,' which have the fatality to taste like chicken, find their way into various fricassees and potpies to grace the table of the Farallonians. According to the keepers but few gull eggs ever reached the city markets in the old 'egg-times,' and personally I do not remember ever seeing them on sale. The shells, compared with those of the murre, are frail and would not stand shipment 'murre style.'

Mr. Cane found a white and almost unspotted gull's egg the first week in June, and Charles Love of our party collected on June 11 a pair, of which one is light pearl and the other greenish clay, and both are but faintly marked. Runts of various sizes were not uncommon. We found the markings to vary from fine scrawls or small spots to great blotches, some of which covered half the side of the egg. Specimens with light and dark ground colors were frequently found in the same set, as well as those with the different styles of markings. Although the gulls seldom eat the eggs of their own kind, on several occasions I noticed them

doing it, especially when the egg had been knocked out of the nest.

Only three or four gulls in immature mottled dress were seen, and when the great flocks on West End would rise and hover above us in their uniform snowy plumage, in the bright sunlight, it was an inspiring sight.

6. Oceanodroma leucorhoa. LEACH'S PETREL.

Although found some years ago on the island by Mr. Leverett M. Loomis, and doubtless breeding there in limited numbers, we failed to find them, although we might have, perhaps, had we come a month later.

7. Oceanodroma homochroa. ASHY PETREL.

We saw little of the petrels except at night, when they fluttered about, or on our daily rambles when we spied their dark form in some narrow crevice in the ledges or rock fences. On being lifted in the hand a dark oily fluid would drip from their beaks, and when released these birds, with the form and wavy flight of a swallow, would make for the open sea. We noticed a number of these dainty little birds which had been killed by striking the telephone and telegraph wires on the island.

The petrels were evidently late in breeding this year, for although we made a thorough search and found many roosting birds, we secured no eggs except those of last year, in which the contents had dried.

8. Phalacrocorax dilophus albociliatus. FARALLON CORMORANT.

We first visited the Main Top Rookery, the only one of this species on the Farallones, on the morning of May 29. After a hard climb, about the hardest on the islands, with all our photographic apparatus, we saw the rookery just above us, below the peak. As we came up a strange and never-to-be-forgotten sight greeted our eyes. All about on the weed nests on the jutting rocks

A PORTION OF THE BRANDT'S CORMORANT ROOKERY.

and boulders sat the angered cormorants with open bills, pulsating throats and ruffled feathers, shaking their snake-like necks back and forth and uttering hoarse guttural, wheezy croaks, and only leaving the nests when we were within arm's reach of it. The parents were easily identified by the bright yellow gular sac, and the young, which most of the nests contained, were inky-skinned creatures, with little in their favor, wobbling helplessly about the nests and barking like little puppies. On our last visit most of them were covered with sooty down and looked more presentable. The eggs, three or four in number, were nearly all well advanced in incubation, although we got several fresh sets; they had the appearance of being finely spotted, on account of the numerous fly specks.

The weed nests (Plate XXVII, Fig. 2) were like those of the gull but much larger and shallower, measuring twenty inches across, the cavity being nine in width and three in depth. I counted but forty-seven nests in the colony, which shows that the number of these birds, now the least abundant cormorant on the islands, is continually decreasing. On subsequent visits we noticed the birds did not re-lay in the nests from which we had taken eggs. The gulls did not molest the eggs and young in this rookery, for the reason the old birds did not give them a chance, they settling back on the nest as soon as we passed it. While it was interesting to watch these avian snakes in their summer home, the decaying remains of numerous fish about the colony and the swarms of seal-flies rendered it a pleasant place to be away from.

9. Phalacrocorax penicillatus. BRANDT'S CORMORANT.

Brandt's Cormorant is the commonest and biggest species of the island cormorants. Besides the large rookery on the more gradual slopes on the north side below Main Top Ridge, extending from near the water to well up the hillside, there are large colonies nesting on Saddle Rock and Sugar Loaf. We gained our first view of the rookery on West End when we crossed the ridge on the morning of May 30. Right below us, with scarcely footspace between the nests, was the great city of cormorants. (Plate XXVII.) I counted 156 nests; on June 3 they had increased to 187, and they were still building. The weeds that trail over the

rocks form most of the nest material, and these become more or less dry by the end of May and are easily detached by the birds; in fact a strong wind will frequently rip up a whole mat-like bed. In make and size the nests of this species are like those of the preceding. I noticed considerable sea moss among the nest material, which is undoubtedly uprooted by the birds themselves, but it was not in such variety as I had been led to believe. Quarrels over nest material were of frequent occurrence among the birds of the rookery, but the most arrant robbers came from the settlement on Sugar Loaf, where the weeds do not grow. It was a queer sight to see one of these great lumbering-flighted cormorants come flapping into the colony, and after some opposition succeed and go awkwardly sailing off with a long stringing bunch of weeds.

After our first inspection we did not approach close to the rookery for the reason that the birds were just laying and were easily put to flight, upon which hordes of screaming gulls would settle down and make off with the eggs, some breaking one after another through pure meanness without touching the contents, while others would devour the egg (less the shell) in the nest without taking the trouble to fly, and by the time the cormorants returned not an egg remained. From the nests on the outskirts we took several sets of four eggs. This species, like the other two varieties, is easily recognized, even at a distance, from its nuptial plumage, the most conspicuous adornments being a dark blue gular sac and small bunches of thread-like feathers hanging from the sides of the neck.

All day long the great rookery was a scene of activity; everywhere the ponderous clumsy birds, using to the best of their ability what skill nature had endowed them with, were fashioning their weed-homes, while scores of setting birds ever and anon would rise to stretch their stiffened wings or to greet their mates returning fish-laden from the sea.

10. Phalacrocorax pelagicus resplendens. BAIRD'S CORMORANT.

Baird's Cormorant, by its small size, sleek plumage, and conspicuous white flanks, was easily separated from the other mem-

bers of the family on the isles. These birds are remarkably adept in clinging to the almost perpendicular cliffs, where on some slight projection or hollow they will place their weed nest, some portion of which frequently extends over the edge. Most were in situations that to think of reaching would take one's breath away, and always brought to mind the use of long dangling ropes or gigantic ladders to bring these unwilling specimens to the cabinet. We were, however, able to reach a number of those in the more accessible places. Although a more or less solitary species we found quite a colony, with about twenty nests, along the precipitous rocky divide on the south side of West End. In many places on the main island and adjoining islets groups of several nests together were common, but a large number of them were isolated. The nests were built in the usual cormorant style, a little smaller and deeper than those of the other two species. The day we came the birds were guarding their homes, evidently fearing usurpation by their own kind, for in all that we could see no eggs had yet been laid, and up to the time we left they were still on duty on the eggless nests. Many of the latter were completed, while others were being built, either over the remains of a last year's structure or anew. When constructing a nest one bird would bring the weeds while its sitting mate would place them, although at times both birds would take a hand in the work, which seemed to progress with marvelous slowness.

11. Lophortyx californicus californicus. California Partridge.

According to Mr. Cyrus J. Cane, the present head keeper, several of these birds were on the island for a period of seven years and built their nests among the grass on the flats. One in particular struck up a great friendship with one of the hens and would roost by its side in the chicken house.

12. Corvus corax sinuatus. American Raven.

For many years a pair of these birds nested in a trough-like aperture in Raven Cliff, but since these were shot last year, on

account of their depredations on the island hennery, no birds of this species, according to the lighthouse crew, have been seen.

13. Carpodacus mexicanus frontalis. HOUSE FINCH.

It was a surprise to us on arising the second day, to hear the loud cheerful whistle of the House Finch perched on the peaked roof of our dwelling, for somehow during the excitement of our first day among the great bird shows we had overlooked the presence of this species, several pairs of which, for the first time, were nesting here and challenging the Rock Wren's long-defended title of being the island's only song bird. Were it not for the grove of friendly evergreens, where these birds would have nested is a puzzle. One nest, which held five eggs in May, was closely made of island grass, with an occasional feather intermixed, and lined with bits of string, cotton and mule hair. We noted another nest with a like complement just before we left.

14. Salpinctes obsoletus. ROCK WREN.

The fluffy little Rock Wren, whether rummaging among the boulders or delivering its cheery song from its granite perch, was a constant companion on our daily travels, except west of the Jordan where I noted it as scarce. Had it not been for the telltale shells and stones which lined the pathways to the nests they would have been difficult to find, for the birds usually slip off unseen and make a great fuss at a safe distance to mislead the searcher. Whether the nest was in a niche in the cliffs, beneath a rock fence, or under a granite ledge cropping out above the surface, it was always placed among rocks firmly embedded and never amid the loose rocks that lay scattered about on the top of the ground. We found in all, including those of the year which had been deserted, and those of the previous season, about twenty nests.

On the 3d of June I excavated with a pick a winding cavity that ran to a nest below a solid granite ledge near the Weather Bureau station and which the children had been unable to reach. In nests of this sort considerable care must be taken, as flying bits of stone or falling debris are liable to destroy the eggs.

FIG. 1. ROCK WREN.

FIG. 2. FARALLON CORMORANT.

This nest held seven eggs in which incubation had made a slight start. It was made of excelsior packing and lined with thread-like grass and mule hair with small bits of cotton about the brim, and had the usual accumulation of stones and shells leading to it. Mr. Love found a nest the same day under a stone wall near Stone House, with a like complement. Most of the birds, however, had young in or out of the nest, and Ernest Wenthars, a promising young bird student, says they start nest-building early in March, for he has noticed eggs in the latter part, and must raise two if not three broods in a season. As many of the nests, however, are robbed by urchins the breeding season is unnaturally extended, for the birds will not lay in a fresh nest which has been disturbed nor re-lay in one from which the eggs have been taken, but will rebuild in a new situation. On the 10th of June I found two of these late nests in the course of construction. We also found the percentage of infertile eggs to be heavy, for in every nest with young we noted one or two addled eggs. The wrens were very tame and when we were tunneling the home of some auklet they would be at our elbow peering among the upturned rocks for some tasty morsel, and one morning one of these birds entered our kitchen; we caught it, and after we had photographed it we set it at liberty. (Plate XXVIII, Fig. 1.)

Perhaps of all its nesting localities the favorite was under the rock foundation of the railway which flourishes under the presumptious title of the 'Farallon Midland.' In fact, in their enthusiastic endeavor to unearth Salpinctian dwellings, some recent ornithological visitors threatened to seriously undermine the roadbed until stopped by head-keeper Cane.

By far the most elaborate nest I found was in the rear of Stone House; it ran in the earth among the rocks of a rock fence. A shelf-like stone at the entrance formed a sort of veranda, and this the birds had literally covered, as well as the main corridor leading to the nest. I noticed the pavement was equally deep under the nest, and that all the tiny nooks and crevices on the way were filled. I carefully counted all the stones and other material in this earthern burrow between the bare granite boulders, and as it was situated two feet up in the wall the birds had undoubtedly brought all of them. The strange assortment of

articles would do credit to some fabled jackdaw, and consists as follows:

Safety pins	1	Pieces of plaster (from walls of house)	4
Pieces of wire	2	Pieces of shingles (some as large as 2 in. x 3 in.)	12
" " a pair of scissors	2	Bits of abalone shells	9
" " zinc (from old batteries)	10	" " mussel "	20
Fish hooks	2	Rusty nails	106
Pieces of glass	2	Bits of flat rusty iron	227
" " leather	1	Small granite stones (very regular in size)	492
Copper tacks	4	Bones (rabbit, fish and bird)	769
Pieces of limestone like that in caves	2		

Also considerable dislocated nesting material, as weed stems, grass, etc.

The birds in this case had easy access to all the little bits of material that accumulate around dwellings; but even then, what a vast amount of patience and labor, as well as perception, it required to find and transport the 1665 listed objects, to say nothing of building the nest itself! This was composed of the bird's favorite substance, excelsior packing, together with a few weeds and grasses and bits of cotton and rabbit fur tucked in decoratively here and there, and measured 5¼ inches over all, while the cavity was 3 inches across by 1½ inches deep.

Of all the nests we noted, in no case did we see one where the birds did not, to a greater or less degree, exercise their strange habit of paving the pathway. While various theories have been advanced to account for it, one cause, which seems to me to more nearly hit the mark is the desire to overcome dampness. Those nests with earthen floors, of varying moistness, have much more pretentious stone walks than cliff-nests which are comparatively dry, although it is true that about the latter there is generally but little space for the wrens to cover. But perhaps the best argument in support of this theory is that the birds before building the nest first line the passage, as I found that stones were equally deep below completed nests, and I also noticed that nests in the first stages of construction had the stone-ways already finished.

ADDITIONS TO MITCHELL'S LIST OF THE SUMMER BIRDS OF SAN MIGUEL COUNTY, NEW MEXICO.[1]

BY FLORENCE MERRIAM BAILEY.[2]

IN THE course of our Biological Survey work in the summer of 1903, when on our way from the Staked Plains to the southern Rocky Mountains in June, and afterwards in rounding the southern end of the mountains and following up the eastern side of the range in July and August, Mr. Bailey and I spent nearly two months in San Miguel County, crossing a large part of its territory. From the Staked Plains we drove north almost half way across the county to the Canadian River, where we were only about twenty-five miles from the eastern boundary of the county, when we turned west, crossing to the extreme western boundary, between Pecos and Glorieta. Through the northwest corner of the county we made two sections, following north into Mora County on the Pecos River Forest Reserve, and after our return to Pecos making another north and south section, driving from Bernal up through Las Vegas and across the northern line of San Miguel into Mora County.

In this way we worked the most marked types of country that the county affords, crossing the plains, climbing the mesas that, in the breaking down of the Rocky Mountain plateau are left as river-cut blocks on the plains, following along the rich fertile bottoms and narrow cañons of the Pecos River, and exploring the mountains of the county on the way to the head of the Pecos. The plains and mesas of the northeastern part of the county, however, we did not visit at all, and work in that section should be done to complete the county records.

In the breeding season the birds of the treeless plains which we crossed in the south central part of the county were Horned Larks and Meadowlarks, the Meadowlarks being found only in

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[1] The Summer Birds of San Miguel County, New Mexico. By Walton I. Mitchell. Auk, Vol. XV, 1898, pp. 306–311.

[2] Published with the permission of Dr. C. Hart Merriam, Chief of Biological Survey.

depressions on the plains where there was moisture. In the higher reaches of the juniper and nut pine — Upper Sonoran — section, some of the characteristic birds were Piñon and Woodhouse Jays, Western Lark Sparrows, Cañon Towhees, Gray Titmice, and Lead-colored Bush-tits. In going from the Staked Plains northwest toward the Rocky Mountains, the mesas rising from the plains grew successively higher, and Transition zone yellow pines were reported to us as far east as Pablo Montoya Grant. The first that we saw were in the central part of the county, on the top of Mesa del Agua de la Yegua, which reaches an altitude of 7000 feet, rising 1000 feet from the juniper plain. With the pines we found many of the birds that usually penetrate the Transition zone, including the Long-crested Jay, Lewis Woodpecker, the Western Wood Pewee, Western Chipping Sparrow, Grace Warbler, and the Rocky Mountain and Pygmy Nuthatches. In the southwestern part of the county the cultivated bottom lands of the Pecos afforded such birds as the Kingbird, San Diego Redwing, Black-headed Grosbeak, Arkansas Goldfinch, Yellow Warbler, and Long-tailed Chat. The extreme northwestern part of the county takes in the southeastern end of the Rocky Mountains and part of the upper Pecos River. This Dr. Mitchell writes me he did not explore, his mountain work being confined to the "eastern drainage of the Vegas ranges." Most of the mountain birds were found by him, however, on the eastern side of the range. Those which we found on the Pecos within the county included such species as the Dusky Grouse, Band-tailed Pigeon, Merriam Turkey, Clark Crow, Mountain Chickadee, Solitaire, and Chestnut-backed and Mountain Bluebirds. As the San Miguel County line apparently crosses the mountains of the Upper Pecos at about 10,500 feet, I have not listed species such as the Gray-headed Junco, White-crowned Sparrow, Ruby-crowned Kinglet, and Audubon Hermit Thrush, which we found at 11,000 feet, although there are peaks east of the Pecos that we did not visit which reach as high as 11,500 feet, on which these birds probably occur, and all of the species of course belong to San Miguel County as migrants, passing through it on their way to and from the higher parts of the mountains.

As we entered the county too late to find the spring migrants

and left it too early to see most of the fall migrants, we recorded mainly resident birds. To Dr. Mitchell's list of eighty-five species we added fifty-six species from actual records within the county lines, and four others from inference, as they breed five hundred feet above and must descend to migrate. As Dr. Mitchell's work was done, as he explains, "in spare moments and on Sundays," and as our work was done, of necessity, largely in passing, more thorough work in the region, especially during the migrations, would doubtless furnish additional species as well as much interesting material. In going over the following list it should be borne in mind that no work was done, either by Dr. Mitchell or ourselves in the northern part of the county, east of the line between Las Vegas and Mora, and that the high mesas east of Mesa del Agua de la Yegua, if carefully worked, would probably give eastward extensions of range to the mountain birds of the county.

Hydrochelidon nigra surinamensis. BLACK TERN.— Several seen August 31 on a pond near Las Vegas.

Querquedula discors. BLUE-WINGED TEAL.— A pair were seen June 20 on a pond on the plains west of Mesa Rica. Dr. Mitchell says that the Blue-wing while common in migration "does not remain to breed," but several pairs were seen June 2 on a pond at Santa Rosa about forty miles southwest of Mesa Rica, and three full grown young were shot on Black Lake, in Colfax County, September 9.

Ardea herodias. GREAT BLUE HERON.— Seen July 2, along the Pecos at Ribera.

Phalaropus lobatus. NORTHERN PHALAROPE.— One seen August 31 in the gray winter plumage, on a pond near Las Vegas.

Steganopus tricolor. WILSON PHALAROPE.— A flock seen August 31 about a pond near Las Vegas.

Actodromas bairdi. BAIRD SANDPIPER.— Seen August 29 to 30 near Las Vegas along a small creek in a field, and one taken September 2 at a pond on the plains twelve miles north of Las Vegas.

Actodromas minutilla. LEAST SANDPIPER.— Seen August 29 to 31 along the stony bottom of a small creek near Las Vegas.

Totanus flavipes. LESSER YELLOW-LEGS.— Several seen August 31 on a pond near Las Vegas.

Helodromas solitarius cinnamomeus. WESTERN SOLITARY SANDPIPER.— Several found August 29 to 31 along a meadow creek near Las Vegas.

Numenius longirostris. LONG-BILLED CURLEW.— Three pairs were

seen on the plains June 20, one with three half grown whitish downy young. On June 22, two or three pairs were found driving a lobo from their nesting ground.

Callipepla squamata. SCALED PARTRIDGE.— Common in the juniper and piñon pine belt across the southern part of the county as far north as Ribera.

Columba fasciata. BAND-TAILED PIGEON.— A few were seen on the Upper Pecos.[1]

Accipiter velox. SHARP-SHINNED HAWK.— One seen August 28 near Las Vegas.

Haliæetus leucocephalus. BALD EAGLE.— Seen at 8000 feet in the Pecos Mountains.

Bubo virginianus pallescens. WESTERN HORNED OWL.— Heard in the Pecos Mountains, and at Solitario on the eastern foothills.

Asyndesmus torquatus. LEWIS WOODPECKER.— Seen June 25 at about 6500 feet in the yellow pines on the Mesa del Agua de la Yegua, and on September 4, in the pines near Solitario Peak.

Selasphorus rufus. RUFOUS HUMMINGBIRD.— At Pecos, at the south base of the Rocky Mountains, on August 25, an adult male *rufus* was seen, doubtless on its way down from the mountains. On August 29 another was seen a few miles north of Las Vegas.

Stellula calliope. CALLIOPE HUMMINGBIRD.— On the western border of the county, three miles south of Pecos, a Calliope Hummingbird was taken August 25.

Tyrannus tyrannus. KINGBIRD.— Though apparently unrecorded from New Mexico, Kingbirds were found on the Pecos River in two localities. Between La Cuesta and Sena on June 30 we saw them over the cultivated fields and orchards of the bottom lands. At Ribera on July 2, when we were camped in the junipers above the Mexican corn fields, a Raven (*Corvus sinuatus*) stole into the junipers apparently in search of a brood of nestling robins. The cries of the old robin attracted a kingbird which flew in protesting vociferously, and gave chase so hotly that the raven beat a hasty retreat. While neither the plains, the deserts, nor the mountains offer attractions to kingbirds, this section of the Pecos River, with its rich bottom lands which have been cultivated for centuries by the Mexicans of the old pueblos, affords ideal breeding grounds for the birds, and had it not been for the absence of naturalists their presence would doubtless have been discovered long since.

Tyrannus vociferans. CASSIN KINGBIRD.— Common. Often seen with *T. verticalis*.

Myiarchus cinerascens. ASH-THROATED FLYCATCHER. — *Myiarchus* was a common bird of the junipers in the southern part of the county in

[1] Additional Notes on the Birds of the Upper Pecos. Auk, Vol. XXI, 1904, pp. 349–363.

June. It was also seen, June 25, at about 6500 feet in the yellow pines on top of Mesa del Agua de la Yegua.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER. — Found in the Pecos Mountains.

Contopus richardsonii. WESTERN WOOD PEWEE.— Near the Canadian River on June 21, *richardsonii* was found brooding eggs in a hackberry. Pewees were also seen June 25, at about 6000 feet on the side of Mesa del Agua de la Yegua, and on August 26 at Ribera on the Pecos.

Otocoris alpestris occidentalis. MONTEZUMA HORNED LARK.— A form of *Otocoris*, identified as *occidentalis* by Mr. Oberholser, was common on the dryest part of the plains in the south central part of the country.

Corvus brachyrhynchos. CROW.— Seen along the Pecos from El Macho to Riberia, at Old Bernal, and near Solitario Peak north of Las Vegas.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD.— Eight were seen on August 29 a mile north of Las Vegas.

Hesperiphona vespertina montana. WESTERN EVENING GROSBEAK.— Flocks and a few pairs were found in the Pecos Mountains.

Carpodacus cassini. CASSIN FINCH.— One seen July 15 in the Pecos Mountains.

Loxia curvirostra bendirei. BENDIRE CROSSBILL.— Common at 11,000 feet in the Pecos Mountains and seen August 21 at 8000 feet.

Spinus pinus. PINE FINCH.— Common in the Pecos Mountains.

Passer domesticus. ENGLISH SPARROW.— Dr. Mitchell states that at Las Vegas "the House Finch takes the place of the English Sparrow, which is conspicuously absent," but in its rapid movement westward the sparrow has now thoroughly established itself in New Mexico, and was found by us not only on the line of the railroad at Santa Rosa, San Miguel, and Las Vegas, but at the remote Mexican adobe towns of Sapello and Taos.

Coturniculus bairdii. BAIRD SPARROW.— One taken September 2 in the tall grass bordering a pond on the plains, twelve miles north of Las Vegas.

Spizella pallida. CLAY-COLORED SPARROW.— Common the last of August in the fields north of Las Vegas.

Spizella breweri. BREWER SPARROW.— Flocks were seen the last of August in the fields and along the fences north of Las Vegas.

Amphispiza bilineata deserticola. DESERT SPARROW.— Seen June 24 in the southern part of the county as far up as Rio Concha. Seen July 7 at Santa Fe. These records help fill out the borderline of the range of the species.

Peucæa cassini. CASSIN SPARROW.— Seen June 28 singing in the mesquite near Cabra Spring, in the south central part of the county.

Aimophila ruficeps scottii. SCOTT SPARROW.— One was taken June 25 in the Upper Sonoran zone at about 6000 feet, on the side of Mesa del Agua de la Yegua. This is a northward extension of range from western Texas.

Pipilo maculatus megalonyx. SPURRED TOWHEE.— Common June 25 in the scrub live oak and pines on the top of Mesa del Agua de la Yegua, and also in the juniper belt west of Pecos.

Guiraca cærulea lazula. WESTERN BLUE GROSBEAK.— Seen July 2 and 11, and August 26, in the junipers between Ribera and Glorieta.

Calamospiza melanocorys. LARK BUNTING.— A male was seen June 24 on the plains between Lopazville and Cabra Springs in the central part of the county. If this was a breeding record it would extend the breeding range southward from Colorado. From August 29 to September 1, a mile north of Las Vegas, small flocks were frequently seen passing over, and numbers were flushed from the fences.

Piranga ludoviciana. WESTERN TANAGER.— Found in the yellow pines in the Pecos Mountains and their foothills in the breeding season, and one was found at the foot of Bernal Mesa on August 27.

Piranga hepatica. HEPATIC TANAGER.— Found in the yellow pines of mesa tops — on June 25, a pair on Mesa del Agua de la Yegua, and August 27, two males and two or three females on Bernal Mesa. The Mesa del Agua record is a slight extension of range.

Hirundo erythrogaster. BARN SWALLOW.— Seen frequently about Mexican adobes. One was found June 29 nesting under the eaves of a house at Gallinas Springs.

Lanius ludovicianus excubitorides. WHITE-RUMPED SHRIKE.— A shrike was seen on June 20 at its nest in a forestiera tree by the Rio Concha in the central part of the county. On September 1, two were seen on telegraph poles a few miles north of Las Vegas.

Vireo gilvus swainsoni. WESTERN WARBLING VIREO.— Found breeding in the Pecos Mountains.

Helminthophila celata. ORANGE-CROWNED WARBLER.— Taken in the Pecos Mountains in July.

Helminthophila celata lutescens. LUTESCENT WARBLER.— Taken in the Pecos Mountains in August.

Dendroica nigrescens. BLACK-THROATED GRAY WARBLER.— One taken three miles south of Pecos, July 3, when singing among the nut pines and junipers.

Geothlypis tolmiei. MACGILLIVRAY WARBLER.— Taken in the Pecos Mountains July 15.

Icteria virens longicauda. LONG-TAILED CHAT.— Seen June 30 to July 2 in the Pecos bottoms from La Cuesta to Ribera.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.— Found in the Pecos Mountains.

Oroscoptes montanus. SAGE THRASHER.— Two seen August 27 in the junipers near Ribera.

Mimus polyglottos leucopterus. WESTERN MOCKINGBIRD — Found in the Lower Sonoran zone in the south central part of the county. A nest containing young was found June 26 in a cactus tree (*Opuntia arborescens*) along the Concha.

Bæolophus inornatus griseus. GRAY TITMOUSE.— Common in the juniper and piñon pines of the Upper Sonoran zone.

Parus atricapillus septentrionalis. LONG-TAILED CHICKADEE.— Found in the Pecos Mountains.

Psaltriparus plumbeus. LEAD-COLORED BUSH-TIT.— Fairly common in the junipers. On the side of Mesa del Agua de la Yegua it was found as high as 6500 feet.

A PRELIMINARY LIST OF THE BIRDS OF LEON COUNTY, FLORIDA.

BY R. W. WILLIAMS, JR.

THE present list is the result of spare moments devoted to ornithology since the summer of 1896. I had hoped, ere this, to present a more complete and satisfactory catalogue of the birds of my county, but the extensive field has proved too broad for the limited time I could give to the subject. I intend this as a basis for future work and publish it now in the hope that it may be of some value to workers in geographic distribution.

It will be noticed that many species, particularly of the Mniotiltidæ, which occur in the peninsula are not recorded here and I feel safe in asserting that they do not come to my part of Florida. They may pass over during migration but continue their course uninterruptedly to some other portion of the State. A few ducks which undoubtedly occur have escaped me. Some of the Limicolæ are not recorded, but that they occasionally visit the county there can be no doubt. I have here recorded only those species about which there could arise no question; have carefully eliminated inferences without strong evidence to support them, and where necessary have given the authority upon which I rely. The list has been annotated as briefly as was consistent with accuracy and a fair presentation of the subject.

A word about the topography and climate was considered advisable, and though very general, it is hoped will convey an idea of the country.

Leon County is one of the northern tier of counties, bounded on the north by Georgia. It occupies almost a central position between the eastern and western extremities of the State.

Tallahassee, the county seat and capital of the State, lies almost midway between Jacksonville and Pensacola, being 165 miles west of the former and 210 miles east of the latter. Forty miles south lies the Gulf of Mexico.

We generally have an abundance of rain at all seasons. A drought of about a month's duration may occur at any season. A few sporadic days in winter are apt to be severe, but are soon followed by springlike, balmy weather.

The northern half of the county is fertile and rolling, everywhere dotted with sheets of water of varying size, from Lake Jackson, 12 miles long, to the smallest mud holes. Innumerable streams dissect the county. The lakes and larger ponds provide suitable haunts for large numbers of water-fowl and their marshes are feeding grounds for several species, notably the Snipe (*Gallinago*).

The southern half is flat, sandy, and sterile. Cypress swamps occur throughout this region, furnishing favorite nesting places for Herons and Anhingas.

The vegetation is varied. That of the northern half of the county is rich in variety and luxuriance, presenting some of the most beautiful scenery in the South.

Oaks of several species, draped with Spanish moss, hickories, sweet gums, magnolias, and pines of the more attractive sort, constitute the forest trees, and everywhere interspersed among these are found the dogwood, sassafras and holly, aside from the plethora of minor shrubbery. That of the southern half is very different, the characteristic trees being the ever present pine and a species of scrub oak we call black-jack, just such vegetation as one would expect to find in such soil. Everywhere throughout these great pineries will be found the palmetto in great abundance. All this interminable monotony is, however, now and then relieved by the appearance of a small tract of fairly fertile soil, supporting a vegetation characteristic of the northern part of the county. An occasional pond is met with, around which will be found clusters of sweet gums and water oaks. As might be expected from the foregoing, the greatest abundance of bird life occurs in the northern half of the county.

At some future time I hope to contribute to ornithological literature a complete list of the birds of my county, with a detailed account of the climate and topography. For the present the foregoing brief notice must suffice.

1. **Podilymbus podiceps.** PIED-BILLED GREBE. — Common resident, retiring to smaller and more secluded ponds in spring, where they remain throughout the nesting season.

2. **Anhinga anhinga.** ANHINGA. — Rather common summer resident in suitable localities, nesting in cypress swamps and feeding in the shallow ponds in the vicinity. I have found eggs as early as April 13 and as late as June 16, the latter date indicating disaster to the first set. Have no record of occurrence in winter, though it is probable that it may be found sparingly.

3. **Lophodytes cucullatus.** HOODED MERGANSER. — Rather common winter resident, found in the lakes and larger ponds.

4. **Anas boschas.** MALLARD. — Common winter resident, frequenting the lakes and larger ponds, occasionally met with in smaller bodies of water.

5. **Mareca americana.** BALDPATE. — Winter resident, occurring only in small numbers and chiefly confined to the larger lakes.

6. **Nettion carolinensis.** GREEN-WINGED TEAL. — Common winter resident.

7. **Querquedula discors.** BLUE-WINGED TEAL. — Common winter resident.

8. **Spatula clypeata.** SHOVELLER. — Winter resident, in limited numbers.

9. **Dafila acuta.** PINTAIL. — Winter resident of more or less abundance.

10. **Aix sponsa.** WOOD DUCK. — Resident, but not abundant.

11. **Aythya marila.** AMERICAN SCAUP DUCK. — Common winter resident, found in company with *affinis* and *collaris*.

12. **Aythya affinis.** LESSER SCAUP DUCK. — Common winter resident. One of the most abundant of all ducks.

13. **Aythya collaris.** RING-NECKED DUCK. — Common winter resident. The most abundant of the Anatidæ.

14. **Harelda hyemalis.** OLD-SQUAW. — Rare winter resident. I have one specimen.

15. **Branta canadensis.** CANADA GOOSE. — Rare winter visitant.

16. **Tantalus loculator.** WOOD IBIS. — A summer resident of more or less abundance, frequenting the shores of lakes and ponds. I have no doubt that their nests may be found in some of the remote cypress swamps of the county. They are gregarious.

17. **Botaurus lentiginosus.** AMERICAN BITTERN. — Fairly common winter resident, frequenting the grassy shores and shallow pools of the larger lakes, sometimes found in the vicinity of the smaller ponds.

18. **Ardetta exilis.** LEAST BITTERN. Formerly quite abundant in spring and summer, nesting in bushes and weeds in and around small ponds. From some unaccountable cause they have almost entirely disappeared from the county.

19. **Ardea herodias.** GREAT BLUE HERON. — Rather a common resident, nesting in the cypress swamps. Very wary at all times. I have been unable to determine the status of this heron, as I have failed to take a specimen. It is possible that it should be referred to the subspecies *wardi*.

20. **Herodias egretta.** AMERICAN EGRET. — Rare summer resident. I found a nest and young on April 24, 1901, in a small cypress swamp three miles west of Tallahassee.

21. **Egretta candidissima.** SNOWY HERON. — Common summer resident, nesting in the cypress swamps in conjunction with *F. cærulea*.

22. **Hydranassa tricolor ruficollis.** LOUISIANA HERON. — Summer resident of more or less abundance. Occurs in large numbers on the Gulf coast of the county just south of us.

23. **Florida cærulea.** LITTLE BLUE HERON. — Common summer resident, arriving in the last of February. Becomes common about March 15. Nests in cypress swamps. I have seen no less than one hundred nests in a single group of small cypress trees.

24. **Butorides virescens.** GREEN HERON. — Common summer resident, nesting in almost any locality where a supply of water may be found. Very solitary in its habits.

25. **Nycticorax nycticorax nævius.** BLACK-CROWNED NIGHT HERON. — Summer resident. Nests in cypress swamps, often in the rookeries of Little Blue and Snowy Herons, but usually in higher situations. Have found eggs about to hatch on April 13 (1895).

26. **Rallus elegans.** KING RAIL. — Rather common resident, more often heard than seen. It nests in the tangled masses of aquatic vegetation.

27. **Rallus virginianus.** VIRGINIA RAIL. — An uncommon winter resident.

28. **Porzana carolina.** SORA. — Rather common winter resident; difficult to flush from its haunts of tangled weeds in the marshes of the lakes and ponds.

29. **Ionornis martinica.** PURPLE GALLINULE. — Common resident. Nests in the smaller grassy ponds and bayous of the large lakes.

30. **Gallinula galeata.** FLORIDA GALLINULE. — Common resident. Nests in same localities as the preceding.

31. **Fulica americana.** AMERICAN COOT. — Common winter resident. Occurs in enormous numbers on Lakes Jackson and Iamonia. They are shot by the negroes for food.

32. **Philohela minor.** AMERICAN WOODCOCK. — Occurs throughout the year in limited numbers. Flushed one in a thicket on the marsh, August 30, 1901.

33. **Gallinago delicata**. WILSON'S SNIPE.— Common winter resident, frequenting almost any marshy locality. Occurs in great abundance on the marshes of our lakes and larger ponds during the spring migration. I have even found them feeding on the hillsides in very wet weather. Large numbers are annually shot by hunters. *Gallinago* is easy prey in the south where their flight is less erratic and not so swift as I am informed that it is in the north. A friend of mine killed sixty odd in a single day's shooting on Lake Jackson a few winters ago. They are less abundant than formerly. They leave the State about April 15, and I have an arrival record of October 3 (1901).

34. **Helodromas solitarius**. SOLITARY SANDPIPER.— Occurs sparingly in the early spring, frequenting marshy land wherever it may be found. Shot one and saw a few others on March 25, 1901.

35. **Bartramia longicauda**. BARTRAMIAN SANDPIPER.— An occasional winter visitor in very wet weather; usually occurs in the spring. Shot one and saw about five others on March 25, 1901. They are extremely wary and difficult to approach.

36. **Oxyechus vociferus**. KILLDEER.— Very common winter and early spring resident, occurring sparingly throughout the year. Indifferent in its tastes for locality, for you are as likely to find it on high and dry lands as on the marshes. It is very active during the hours of darkness. Forms an object of sport for the younger nimrods. I have one record of its nesting in the county. A set of four eggs was taken several years ago by a friend.

37. **Colinus virginianus**. BOB-WHITE.— Common resident. Our birds approach more nearly the common form, but are considerably darker, especially in the region of the head. It is quite probable that *floridanus* may be found in the southern part of the county. Some of the finest 'quail' shooting in this country is still to be had in Leon County.

38. **Meleagris gallopavo silvestris**. WILD TURKEY.—Resident; formerly common, now restricted to wilder portions of the county.

39. **Zenaidura macroura**. MOURNING DOVE.— Common resident. Much more abundant in winter. Nests usually in pines. Large numbers are annually killed for sport and food. Its flesh is held in high estimation.

40. **Columbigallina passerina terrestris**. GROUND DOVE.— Resident. Formerly abundant at all times, now, from some unaccountable reason, exceedingly rare at any time. Its total disappearance for the space of twelve months in very recent years is one of the mysteries of Leon County ornithology. Latterly it has returned in very limited numbers.

41. **Cathartes aura**. TURKEY VULTURE.— Common resident. Frequents the city in larger numbers than *Catharista* and is more nearly domesticated. It performs valuable sanitary functions, ridding our yards and streets of much offal and excrementitious substances. It is exempt from even the recklessness of boys and enjoys immunity from danger everywhere. Though as common as the following species, its nests are seldom found.

42. **Catharista urubu.** BLACK VULTURE. — Common resident. Of retiring habits during the nesting season, which begins as early as February 20. Less frequently seen in the city than *Cathartes*, though it will be found in large numbers during winter, roosting in the tall moribund red oaks so abundant in Tallahassee. It is impossible for one to divest himself of the gloomy effect such a sight produces upon his senses. The sable pall stands out in bold relief against the clear, moonlit sky and the assemblage seems one of chief mourners at some august funeral. It is likewise exempt from the devastating hand of man.

43. **Elanoides forficatus.** SWALLOW-TAILED KITE. — Of occasional occurrence in the spring, either singly or in flocks. I have no record of its nesting.

44. **Ictinia mississippiensis.** MISSISSIPPI KITE. — Of irregular occurrence in spring. Never present, so far as I am able to determine, except in 'flights,' lasting usually only long enough to accomplish a leisurely journey across the county. While so travelling they are invariably engaged in most graceful and complex evolutions. Notwithstanding the assertion that they occur only in flights of short duration in spring, I feel obliged to refer to a single egg sent a few years since to the National Museum for identification and pronounced to be the egg of an *Ictinia*. I have not seen the egg recently. It was found in a nest, about 30 feet up in a pine, near a public highway, by my friend Gilman J. Winthrop, and is now in our joint collection at his home in Tallahassee. This establishes a nesting record for the species in Leon County, but it is certain that the bird is a very infrequent summer resident.

45. **Circus hudsonius.** MARSH HAWK. — Rather common winter resident, usually seen flying over old well-weeded fields in pursuit of its humble prey.

46. **Accipiter velox.** SHARP-SHINNED HAWK. — Resident. I have no nesting records.

47. **Accipiter cooperii.** COOPER'S HAWK. — Common resident. Nests usually placed in a pine. Very troublesome around the poultry yard.

48. **Buteo borealis.** RED-TAILED HAWK. — Common resident.

49. **Buteo lineatus alleni.** FLORIDA RED-SHOULDERED HAWK. — Common resident. Have been unable to determine its exact status.

50. **Buteo platypterus.** BROAD-WINGED HAWK. — Common resident. Fresh eggs are found about May 1.

51. **Haliæetus leucocephalus.** BALD EAGLE. — Resident in limited numbers. One set of two eggs was taken December 22, 1896, by my friend Winthrop.

52. **Falco columbarius.** PIGEON HAWK. — Rare migrant, so far as known. Have taken one, October 12, 1901.

53. **Falco sparverius.** AMERICAN SPARROW HAWK. — Common resident.

54. **Pandion haliaëtus carolinensis.** AMERICAN OSPREY. — Found sparingly throughout the year. One nested on an island in Lake Iamonia a few years since.

55. **Strix pratincola**. AMERICAN BARN OWL.— Rather common resident, nesting as early as December 10 (1901). I have found nests in the large red oaks within the city limits.

56. **Syrnium varium alleni**. FLORIDA BARRED OWL.— Resident, in some abundance.

57. **Megascops asio floridanus**. FLORIDA SCREECH OWL.— Common resident. Begins nidification by April 1.

58. **Bubo virginianus**. GREAT HORNED OWL.— Rather common resident.

59. **Coccyzus americanus**. YELLOW-BILLED CUCKOO.— Common summer resident, nesting in diverse situations. Is fond of trees along public highways for nesting sites. Fresh eggs have been taken on August 11 (1900). I have a set of six eggs.

60. **Coccyzus erythrophthalmus**. BLACK-BILLED CUCKOO. — Occurs sparingly in summer. One record of its nesting.

61. **Ceryle alcyon**. BELTED KINGFISHER.— Rather common summer resident and occurs sparingly in winter.

62. **Campephilus principalis**. IVORY-BILLED WOODPECKER. — Formerly a fairly common resident, now restricted to dense forests and cypress swamps, if it occurs at all. A few have been killed in the last 15 years and one of our citizens wore a pair of mandibles as a watch-charm, taken from a bird he shot about seven years ago.

63. **Dryobates villosus audubonii**. SOUTHERN HAIRY WOODPECKER. — Rare resident.

64. **Dryobates pubescens**. DOWNY WOODPECKER. — Common resident.

65. **Sphyrapicus varius**. YELLOW-BELLIED SAPSUCKER. — Rather common winter resident.

66. **Ceophlœus pileatus**. PILEATED WOODPECKER. — Resident; confined to the larger tracts of woodland. More common in southern part of the county.

67. **Melanerpes erythrocephalus**. RED-HEADED WOODPECKER. — Common summer, and less abundant winter, resident. The commonest woodpecker in the county. Found usually in the forests of decaying pines so abundant throughout the county.

68. **Centurus carolinus**. RED-BELLIED WOODPECKER. — Common resident. Shows a preference for dead portions of living trees for nesting site.

69. **Colaptes auratus**. FLICKER. — Common resident. Not so much sought after as an article of food as formerly.

70. **Antrostomus carolinensis**. CHUCK-WILLS-WIDOW. — Common summer resident, arriving about April 1; occasionally seen in winter, but not of constant occurrence. My friend Winthrop saw one December 28, 1903.

71. **Antrostomus vociferus**. WHIP-POOR-WILL. — Rare at any season. The only authentic record of its occurrence, if indeed it is a valid record,

rests upon a set of eggs taken several years ago by one of the numerous juvenile egg collectors in Tallahassee. I saw the eggs then and commented upon their very small size and expressed the belief that they could not be those of *carolinensis*. I am confirmed in my conviction that the set was one of this species. I have never seen the bird nor heard its notes.

72. **Chordeiles virginianus.** NIGHTHAWK. — Common summer resident, though its nest is not frequently found. I have never taken its eggs. During the spring it is retiring and seldom seen, but later in the season it begins to emerge from its seclusion and in large numbers scours the air from 5 o'clock till after nightfall. Often seen early in the morning by those of more energetic habits than the writer. This bird furnishes sport for those persons devoted to the gun and enormous numbers have been slaughtered annually for years past. While they are primarily shot for 'sport,' their flesh is held in high regard, and I can testify to their delightful flavor while I deprecate the sacrifice. As would be expected, they have greatly decreased in numbers in the last five years. Public sentiment has not yet stamped its disapproval on this worse than useless destruction.

73. **Chætura pelagica.** CHIMNEY SWIFT. — Common summer resident. Arrives about March 28. Records for arrival for three years are: 1901, March 26; 1902, March 27; 1903, March 28. They remain long after the bulk of summer residents have gone. Of late years they have suffered reverses in procuring available nesting sites on account of their own bad manners. I have known of some costly carpets almost wholly ruined by them. After the nesting season they collect in enormous numbers every evening, circle over and dive into certain attractive chimneys, loosen the soot in their fluttering and precipitate the black matter into the room below. The result is apparent. This has necessitated the resort to wire netting over the tops of most of our chimneys and the birds must soon return to their ancient custom of nesting in old trees or abandon our county. I deprecate the day when such a cheerful little visitor must avaunt.

74. **Trochilus colubris.** RUBY-THROATED HUMMINGBIRD. — A summer resident, very retiring during the nesting time. Have only one record of its nest and eggs.

75. **Tyrannus tyrannus.** KINGBIRD. — Common summer resident, arriving about April 1; gregarious during late summer and very silent. Records of arrival for four years are: 1900, March 27; 1901, March 25; 1902, March 30; 1903, April 3.

76. **Myiarchus crinitus.** CRESTED FLYCATCHER. — Common summer resident, arriving about April 1. Records of arrival for three years are: 1901, March 31; 1902, March 30; 1903, April 4.

77. **Sayornis phœbe.** PHŒBE. — Common winter resident. Found them common October 11, 1901, and they were still present March 25, 1902. Never occurs in summer.

78. **Contopus virens.** WOOD PEWEE. — Migrant. Never abundant. Took one in my yard September 4, 1901.

79. **Empidonax flaviventris.** YELLOW-BELLIED FLYCATCHER. — Rare migrant in fall. Collected one October 11, 1901.

80. **Empidonax traillii alnorum.** ALDER FLYCATCHER.—Rare migrant. Collected one August 6, 1900.

81. **Pyrocephalus rubineus mexicanus.** VERMILION FLYCATCHER.— On March 25, 1901, I shot an adult ♂, three miles east of Tallahassee. The bird was in excellent condition and seemed perfectly at home on smaller bushes and a wire fence around Lake Lafayette. The specimen is now in the Smithsonian Institution collection of birds. For notice of the capture see Auk, XVIII, 273.

82. **Cyanocitta cristata florincola.** FLORIDA BLUE JAY.— Very common resident; begins nesting by April 1 and continues till late in August.

83. **Corvus brachyrhynchos.** AMERICAN CROW.— Common resident.

84. **Dolichonyx oryzivorus.** BOBOLINK. — Migrant. Very erratic, occurring at irregular intervals during spring. Sometimes lingers several days to feed on the oats and millet. When present they are very numerous.

85. **Molothrus ater.** COWBIRD.—Exists now in vivid recollection only. The bird was common in Leon County up to 1893, since which time I have never seen a single specimen, although I have made every effort to find it. Its disappearance is one of the mysteries of ornithology and a parallel case to the "Disappearance of the Dickcissel from the District of Columbia."

86. **Agelaius phœniceus.** RED-WINGED BLACKBIRD.— Common resident, more numerous in summer. Highly gregarious in winter, feeding in the tall weeds of old cornfields. The male assumes the plumage of the female at this season.

87. **Sturnella magna.** MEADOWLARK. — Common resident. Very retiring in the nesting season.

88. **Icterus spurius.** ORCHARD ORIOLE.— Common summer resident. Record first arrival, a male, of 1902 on March 23. Begins to nest very soon after arrival. Pear groves are favorite nesting places for them. I have seen many nests in a radius of three acres. They are very fond of the long, pendant clusters of Spanish moss hanging in such graceful festoons from our large water and live oaks for nesting sites. Before they leave in late summer or early fall they become very retiring and quiet.

89. **Icterus galbula.** BALTIMORE ORIOLE.— A rare migrant. I shot one, a female, in our yard on March 3, 1902.

90. **Euphagus carolinus.** RUSTY BLACKBIRD.— Migrant in spring. Occasionally seen following the ploughmen, gleaning what food it can from the newly turned soil.

91. **Quiscalus quiscula aglæus.** FLORIDA GRACKLE.— Common summer resident, arriving in February.

92. **Astragalinus tristis.** AMERICAN GOLDFINCH.— Common winter resident, the male arriving in and retaining the plumage of the female.

93. **Pocecetes gramineus.** VESPER SPARROW.— Common winter resident. It is the most abundant sparrow with us, likely to be seen in any locality, but its favorite haunts are the old cotton fields. On January 22, 1902, I shot an albino specimen. This bird was entirely white. They were still with us on April 13, 1902.

94. **Passerculus sandwichensis savanna.** SAVANNA SPARROW.— Of infrequent winter occurrence. I have only one record.

95. **Coturniculus savannarum passerinus.** GRASSHOPPER SPARROW. —Common winter resident; remains in small numbers late in spring. One record as late as April 27 (1902).

96. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.— Very common winter resident. A dooryard bird of fascinating demeanor and confiding habits. They congregate in large flocks in April, preparatory to leaving. The latest record of their presence is May 3 (1903), when I saw two.

97. **Spizella socialis.** CHIPPING SPARROW.— Common winter resident.

98. **Spizella pusilla.** FIELD SPARROW.— Common winter resident.

99. **Peucæa æstivalis bachmanii.** BACHMAN'S SPARROW.— Common winter resident. Usually flushed close to one's foot, from dense broomsedge undergrowth in pine thickets. As soon as flushed it flies to the higher branches and sits there in a rigid posture with an expression of terrified emotions. It is rather a solitary bird.

100. **Melospiza cinerea melodia.** SONG SPARROW.— Winter resident, of less abundance than several other sparrows. It does not sing with us.

101. **Melospiza georgiana.** SWAMP SPARROW.—Common winter resident, remaining, sometimes, late in spring. It frequents high broomsedge fields as readily as it does the weedy marsh.

102. **Pipilo erythrophthalmus.** TOWHEE.— Resident. Common in winter, not nearly so abundant in summer.

103. **Pipilo erythrophthalmus alleni.** WHITE-EYED TOWHEE.— Not so abundant as the preceding. Do not believe it occurs in summer.

104. **Cardinalis cardinalis.** CARDINAL.— Common resident.

105. **Zamelodia ludoviciana.** ROSE-BREASTED GROSBEAK.— Of very infrequent occurrence. Recorded once by my friend Winthrop. I have never seen it.

106. **Guiraca cærulea.** BLUE GROSBEAK.— Summer resident, but not abundant. The only nest I have ever seen was on June 14, 1903. It contained four half-grown young.

107. **Cyanospiza cyanea.** INDIGO BUNTING.— Migrant. Passes through the county irregularly in spring. Never abundant.

108. **Cyanospiza ciris.** PAINTED BUNTING.— The appearance of this bird in Tallahassee in the latter part of April, 1901, is very little less remarkable than the disappearance of the Cowbird about 1893. So far as

I have observed or learned, the bird has made its appearance in my county but once. On the 23rd of April, 1901, I was summoned to the home of a lady friend to identify for her certain little birds which had lately made her back yard a temporary home. Arriving there late in the evening I found a number of these birds quietly feeding in the grass of her lawn. Though I had not before seen the species, it was no difficult task to identify them. She said they had been there for four days. I did not find them elsewhere, and they disappeared in a few days as mysteriously as they had come. I was told by reliable citizens of Apalachicola that the birds were such a pest there at this time that the people of the city were obliged, in their opinion, to protect their gardens by resort to the gun. I can account for this unusual occurrence of the bird in northern Florida upon one hypothesis only. Just at this time a fearful storm raged on the Gulf coast just to the south of Tallahassee. Many vessels were wrecked, and houses destroyed in one of the seacoast towns. Much of the wind and some of the rain reached my county. This may have driven the birds inland during their migration.

109. **Piranga erythromelas.** SCARLET TANAGER.—I have but one record of its occurrence in the county.

110. **Piranga rubra.** SUMMER TANAGER.—A common summer resident; nests abundantly. Arrives about March 30. After the nesting season and before leaving in the fall they become very recluse.

111. **Progne subis.** PURPLE MARTIN.—Common summer resident, arriving in some numbers by February 15. Records for arrival for three years: 1901, Feb. 20, 2 males; 1902, Feb. 14, 3, 2 males, 1 female; 1903, Feb. 8, 2. Those that come first remain. They are well established in their summer quarters by the middle of March. I always erect for them a house in our backyard and one of the pleasantest features of the long summer is the cheerful note of this bird. They begin to quit their nesting places about the middle of June, when they betake themselves and their young to the topmost branches of the tallest oaks, there to remain till the young are able to shift for themselves. They leave the county about the middle of July, but occasionally large flocks may be seen passing over till the middle of September. My latest record is September 27 (1901).

112. **Iridoprocne bicolor.** TREE SWALLOW.—Migrant, occurring at irregular intervals, remaining only a few days. My records are: 1900, April 29 and May 5; 1902, March 30; 1903, March 26.

113. **Riparia riparia.** BANK SWALLOW.—So far as I can learn it is a migrant only, visiting the county in spring and late summer. I have seen it in numbers on April 16 (1900) and August 28 (1901). It is said to nest abundantly at St. Marks.

114. **Ampelis cedrorum.** CEDAR WAXWING.—Common winter resident, prolonging its stay late into the spring. Arrives very irregularly, sometimes in October and again not until a month and a half later. My earliest record of appearance is October 19 (1901), the latest May 8 (1903).

They feed extensively on the berries of mistletoe, wild olive (*Prunus*) and China tree. Sometimes found in company with bluebirds and often feeds with robins.

115. **Lanius ludovicianus.** LOGGERHEAD SHRIKE. — Common resident.

116. **Vireo olivaceus.** RED-EYED VIREO. — I cannot regard this bird as anything else than a rare resident. I have never found its eggs, but have seen an old nest. It probably passes further south in winter, my latest record being October 10.

117. **Vireo flavifrons.** YELLOW-THROATED VIREO. — Rare migrant; one record only, October 15, 1900.

118. **Vireo noveboracensis.** WHITE-EYED VIREO. — Perhaps resident, though I have no summer record for the county. I found it in Franklin County, near the Gulf coast, in July and August, 1901. It is not a common bird in winter.

119. **Mniotilta varia.** BLACK AND WHITE WARBLER. — Winter resident, but not common. Arrives in August, remains till April. My earliest and latest records are August 5 (1896) and March 31 (1901).

120. **Protonotaria citrea.** PROTHONOTARY WARBLER. — Summer resident, but not common. I have taken two sets of eggs, the last April 29, 1899. In both cases the nest was in a cypress swamp.

121. **Helminthophila bachmanii.** BACHMAN'S WARBLER. — Only one record. I took this specimen on August 4, 1900.

122. **Compsothlypis americana.** PARULA WARBLER. — So far as I have been able to discover, this is a migrant only. I found it quite abundant on August 6, 1896, and in March, 1903. I have no records for any other month, though it is probable that it occurs in September and April.[1]

123. **Dendroica æstiva.** YELLOW WARBLER. — I believe this is a migrant only, although I found it rather common in Franklin County between July 20 and August 1, 1901. It is not resident with us in winter.

124. **Dendroica coronata.** MYRTLE WARBLER. — Common winter resident; one of the commonest birds we have. Spends much of its time on the ground; almost a terrestrial bird in Leon County. It moults before leaving for the north in spring.

125. **Dendroica dominica.** YELLOW-THROATED WARBLER — Common summer resident; nests early. As I have a record for January 3 (1901), it is probable that the bird is a resident.

126. **Dendroica vigorsii.** PINE WARBLER. — Resident; more abundant in winter.

127. **Dendroica palmarum.** PALM WARBLER. — Winter resident, spending most of its time on the ground.

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[1] Since writing the above I have discovered evidence that quite conclusively proves that this species nests in the county. I collected two specimens, one undoubtedly young of the year, on July 23, 1904.

128. **Dendroica palmarum hypochrysea**. YELLOW PALM WARBLER.— Winter resident; rather common; found associated with the preceding.

129. **Dendroica discolor**. PRAIRIE WARBLER. — Migrant. I have no record except for August. Found it rather common on James Island, in Franklin County, between July 20 and August 1, 1901.

130. **Seiurus aurocapillus**. OVEN-BIRD. — Rare migrant. Have seen but one, March 2, 1902.

131. **Geothlypis trichas**. MARYLAND YELLOW-THROAT. — Common resident, nesting around marshes and ponds, retiring to high land in winter; it is a common hedge-row bird at this season.

132. **Icteria virens**. YELLOW-BREASTED CHAT. — Summer resident; not common. A few nests have been found.

133. **Wilsonia mitrata**. HOODED WARBLER. — Migrant; never abundant. I have no record of its occurrence between April 13 and July 16, and no winter record.

134. **Setophaga ruticilla**. AMERICAN REDSTART.— Migrant; lingers a short time in fall. My earliest record is August 28, 1901, when I saw two males. Saw another in Franklin County on September 21, 1901.

135. **Anthus pensilvanicus**. AMERICAN PIPIT.— Probably a winter resident in small numbers. I have never seen it. It has been taken once and seen several times by Winthrop.

136. **Mimus polyglottos**. MOCKINGBIRD.—Common resident.

137. **Galeoscoptes carolinensis**. CATBIRD.— Winter resident, but not common. Remains as late in spring as April 27 (1901).

138. **Toxostoma rufum**. BROWN THRASHER.— Common resident.

139. **Thryothorus ludovicianus**. CAROLINA WREN.— Common resident.

140. **Thryomanes bewickii**. BEWICK'S WREN.— Rather common winter resident.

141. **Troglodytes aëdon**. HOUSE WREN.— Common winter resident.

142. **Olbiorchilus hiemalis**. WINTER WREN.— Winter resident, in small numbers.

143. **Cistothorus stellaris**. SHORT-BILLED MARSH WREN.— Rather common winter resident.

144. **Certhia familiaris americanus**. BROWN CREEPER.— Have never seen it. There is one record of its occurrence. This one flew into the house of a friend and was captured.

145. **Sitta pusilla**. BROWN-HEADED NUTHATCH.— Resident, not common. Have taken two sets of eggs.

146. **Bæolophus bicolor**. TUFTED TITMOUSE.— Rather common resident.

147. **Parus carolinensis**. CAROLINA CHICKADEE.— Common resident.

148. **Regulus satrapa**. GOLDEN-CROWNED KINGLET.— Common winter resident; may pass further south for a brief period.

149. **Regulus calendula**. RUBY-CROWNED KINGLET.— Common winter resident.

150. **Polioptila cærulea**. BLUE-GRAY GNATCATCHER.— Summer resident.

151. **Hylocichla mustelina**. WOOD THRUSH.— Rare migrant in spring.

152. **Hylocichla guttata pallasii**. HERMIT THRUSH.— Common winter resident. They seem to be distributed, two or three to each piece of woodland.

153. **Merula migratoria**. ROBIN.— Common winter resident. Feeds extensively on the berries of China tree, dogwood and olive tree (*Prunus*). Large numbers of them are frequently seen feeding on the recently burned marshes of the large lakes and ponds. The bird's bill has changed to black before it reaches our borders. They reach northern Florida about November 1, and are not common till the 20th. By April 15 they have disappeared. The Legislature has placed them on the game list.

154. **Sialia sialis**. BLUEBIRD.— Common resident. In the past two years its numbers have been appreciably augmented and it seems now on the road to recovery from the disastrous winters of 1894 and 1899.

ADDENDA.

This article was prepared in the spring of 1904 from notes which I then had with me in Washington. Since its completion I have returned to my home and in the brief space of a month, in the midst of other duties, added two species to the list.

155. **Actitis macularia**. SPOTTED SANDPIPER.— One heard during the early part of the night of August 5, 1904. Much rain had fallen for several days and the streets were running with water. The bird was feeding in the street in front of our yard. Its characteristic notes could be plainly heard when it shifted its position from one side of the street to the other.

156. **Seiurus motacilla**. LOUISIANA WATER-THRUSH.— First record of the species was made on July 23, 1904, when I saw one and heard another.

NESTING HABITS OF THE WOODPECKERS AND THE VULTURES IN MISSISSIPPI.

BY CHARLES R. STOCKARD.

OBSERVATIONS on the nesting and laying of the Woodpeckers (Picidæ) and the Vultures (Cathartidæ) have shown several very interesting phenomena. The following will be an effort to bring out the rather peculiar and often unexpected actions on the part of these birds without any attempt to go into detail or record the many familiar nesting habits that are well known to all ornithologists. The notes are taken entirely from my data that were made while collecting and observing in the field in the east central and southwest portions of Mississippi.

Ceophlœus pileatus. PILEATED WOODPECKER.—This bird has become rare in many parts of Mississippi but is still rather common in certain portions. During three seasons seventeen nests were watched in Adams County. In the vicinity where observations were made every small woods had its pair of these large woodpeckers. The individuals of this species seemed to occupy very small feeding areas. Of the seven nests that were found in 1902 five pairs of the birds were located in their respective woods during the previous December and January. Whenever a pair was once seen feeding in a wood during the winter the same pair could always be found very close to that place. At the beginning of the nesting season they would invariably make their burrow in some dead but sound tree near the edge of the brake. From continued observation it appeared certain that whenever a pair were found in a small wood during the winter they were sure to nest there the following spring.

The burrow is very large and requires in most cases about one month for construction, being commenced in this locality about the latter part of February. But it was found very difficult to note the exact length of time consumed in burrowing, as the birds try so many parts of the same tree before striking one to suit their taste. The nest tree and other dead trees close at hand were often scarred from top to bottom. In two cases they began a nest, then seemed to start one in another place, and then returned

to the former and completed it. Of course it may be that the first attempt was a definite site and they only tapped about in other places to feed. But it is very certain that they did no work on the nest hole for a space of several days after it had been worked for two or three days continuously. It was a rather difficult matter also to decide when the burrow was complete. In some cases this seemed to be when laying began. Again nests were found complete, and one could be certain that it was not worked further, though laying did not begin for an entire week.

The birds were very shy and would usually leave the nest the moment the tree was rapped with the hand or a stick. The birds flew completely out of sight into the woods not to appear again until the intruder was well away from the nest tree. Only one pair was observed that had their nest in a dead tree which stood in an open field at least sixty or seventy yards from the wood. The female in this case flew about the nest tree and lit once on the upper part and again just over the nest hole while a person was in the act of climbing the tree. This was by far the most daring bird seen and, as mentioned above, because of the isolation of the tree, her burrow was unusually exposed for this species.

In the spring of 1901 my first observations were made in Adams County. Four pairs were located in February just as they were selecting nesting sites. It was then expected that they would continue laying after the first set was removed, as most other members of the family will do. It was also thought that some sets would contain five or six eggs, as many writers claim for this bird. The first nest, a burrow twenty-five feet from the ground in an old sycamore stump, contained one egg on March 22; March 26 it contained three, and on April 1, when the set was removed, it consisted of four slightly incubated eggs. The burrow was left undisturbed until May 14, when it was also taken by being sawed off from above and below the cavity. The bird had undoubtedly deserted it as soon as she found her eggs gone. The pair staid in this wood for the remainder of the season but did not attempt to construct a second burrow.

The next set was taken April 7 and contained only three eggs that had been incubated about one week. This nest, being rather

difficult to reach, had not been disturbed previous to this occasion. Again the burrow was deserted, no second one was constructed, and the birds remained for the rest of the season in this same wood where every suitable tree could be watched. Another set of four eggs was taken on April 8, and the conduct of the birds was much the same. The fourth, a set of four eggs, was allowed to hatch, and the parents were as shy after the nest contained young as they had been before. They would disappear whenever the nest was visited and would not return until the intruder was away. When I would leave and conceal myself some distance away the birds would return within less than two minutes, fly to the hole, peer in, and finding all safe, would again fly away. But when the observer after leaving the burrow remained in the open about thirty yards from the nest tree, at least ten or fifteen minutes would pass before the birds would come within sight; then they would immediately turn and fly back without approaching the nest. They had evidently hidden themselves in the wood and watched the actions about the nest and came back only when they felt that danger was past. Later observations showed that this was an unusually shy pair.

In 1902 seven pairs were found. Four of these seven laid sets of four eggs each, two pairs gave sets of three each, and one pair had a set of only two eggs. These are the smallest sets that I have known from a woodpecker. Five is about the usual number of eggs for the family in Mississippi. In the seven cases the nests were all in similar localities, the burrows little different in size and other particulars, and the nesting habits of the birds much as those cited above.

Five pairs were located during December, 1902, and January, 1903. Four of these pairs were birds that had been watched in their respective woods the previous season. They all nested in the same brakes during the spring of 1903. On March 18 another pair was located in the act of preparing the burrow. These six nests had four sets of four eggs each, one set of only three eggs, and one containing five eggs, the only set of five found in seventeen nests. Four of these sets were hatched. The two pairs from which the eggs were taken did not lay a second set nor build another nest, though as usual they remained in the same wood throughout the season.

I was always unable to observe this locality from about the middle of June until the first of October, but feel sure that these birds did not construct new nests during the summer. Further, on careful searches, no additional pileated burrows were to be seen in the fall, though the birds were still present. As mentioned above it was noted that the same pair would nest in its wood of the former year. In four instances, all of which had lost their eggs the year before, the birds built their new burrows in their several woods within a distance of about one quarter of a mile from the previous nest site. These four are the only cases which were watched with special care. As the birds confine themselves so closely to a given district, and as each piece of woodland is more or less distant from another, the birds are rather easy to keep located. The Flicker, Red-headed, and Red-bellied Woodpeckers of this vicinity also have the habit of nesting repeatedly near the same site after it is once chosen.

Centurus carolinus. RED-BELLIED WOODPECKER. — I have found this woodpecker to be a most interesting bird to observe on account of its remarkable ability for persistent laying. In the spring of 1900 a nest of this species was located in a dead cottonwood tree which stood in an open pasture. The nest was a burrow fifteen inches deep with a perfectly circular entrance about forty feet above the ground. A set of five eggs was taken from it on April 24. The entrance being small it was found necessary to cut it larger so as to admit my hand. Twenty-three days later the same nest contained a second set of five eggs, slightly incubated. The enlarging of the entrance evidently had had no ill effect except for the fact that the burrow had been deepened several inches, probably to prevent an extra amount of light on the floor of the nest. These birds seem to gauge the depth of their excavations more by the amount of light admitted than from any instinct to dig a certain distance. For example, burrows that had their entrance just below a limb or were situated in shady woods were noticed, as a rule, to be shallower than those located in exposed fields or on the sunny side of the tree. The second set mentioned above was taken May 17 and on returning nine days later, May 26, a third set of five eggs was in the same nest. The fact that this set followed the second so much closer

than the second did the first may be explained by the fact that no additional deepening of the burrow had taken place this time, and the second set had become slightly incubated before it was observed. The third set was removed, and on my return June 2, only seven days later, the nest contained a fourth set, consisting of only four eggs. This set was allowed to hatch and the four young woodpeckers were seen in the nest on June 24, when they appeared to be several days old. The nest had then contained four sets with a total of nineteen eggs within the one season of 1900. It appears certain from the following considerations that all nineteen eggs were laid by the same female. The nest tree was rather isolated and there was only one pair of Red-bellied Woodpeckers to be seen in the immediate vicinity during that spring. Also I had seen many of these birds nesting for several years and had not seen one using a second-hand burrow, and feel sure that if they should select one a nest with its entrance so mutilated would not be chosen. The most conclusive evidence is that the eggs of the third set had very much thinner shells than those of the other two sets, or than normal eggs of this species. The size and shape of the eggs were about the same in all of these sets, though it might have been expected that the later eggs would have been smaller.

On several occasions two sets have been seen from the same pair during one season, but I have only in the one case followed it out to the extent recorded above. In Mississippi the second set was always placed in the same burrow that had contained the first, though these birds are recorded from different localities by other observers as digging a new burrow for the second set after the first eggs had been removed.

Colaptes auratus. FLICKER. — It is a well known fact that Flickers will continue laying for some time if the eggs are repeatedly removed from the nest. Thirty-four is the largest number that I have been able to secure from one bird. This seems insignificant when compared to the string of eggs obtained from a Flicker by Phillips in 1883 (Auk, IV, p. 346). He succeeded in making his bird lay seventy-one eggs in seventy-three days by starting with two and continually removing one, leaving the other as a 'nest egg.'

In 1900 a Flicker's actions under very peculiar conditions were observed. On April 18 a burrow of a Flicker containing only one fresh egg was found. The egg was not disturbed. When visiting the nest again on April 28 a flying squirrel was found in possession. On my arrival the bird was at the entrance of the burrow peering in at the intruder. It was supposed that the squirrel was eating the eggs, but on examining the nest it was found to contain one spoilt egg. The squirrel had then probably been in possession for the ten days since the nest was observed, so the bird had been unable to enter and lay; thus only the one egg was present, and not having been properly cared for had spoilt. The Flicker must then have remained about her nest for this length of time, and as soon as the squirrel was removed she again took charge. On visiting the nest May 5, seven days later, it contained seven fresh eggs and the old one that had been left. Thus she had laid an egg each day since getting back to her burrow. The eggs were removed to see if she would continue laying, but she did not. This was undoubtedly a case of discontinuous laying unless she had dropped her eggs on the ground while the squirrel was occupying the nest. It seems strange that she did not produce the second set, for although she may have laid every day only seventeen eggs could have been dropped, which is far short of the Flicker's ability in many cases. This is the third instance, while watching twenty-eight pairs of these birds, of a failure to lay a second set in the same nest after the first had been removed. The Flicker was found, in this section, to dig a new burrow each season, and was not seen to use an old burrow or a natural cavity for nesting. Several pairs were, however, observed nesting in the roof crevices of attics.

Dryobates pubescens. DOWNY WOODPECKER. — Several nests of this species were observed, the birds being rather common in the State. No observations were made on their second laying, but the nesting sites were found to be very similar. One or two burrows were seen in almost horizontal branches with their entrance on the lower side, so that the cavities were practically parallel to the ground. The earliest complete set was found April 20, 1900; fresh eggs were not found after May 18.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.

— Many cases were noted of the second set in the same burrow from this woodpecker when the first eggs of the season had been removed. Careful observations were not made to find whether the laying would continue after the second set had been taken. The Red-head was found to begin laying later in the season than any other member of the family. May 12, 1901, was the earliest full set seen, and fresh eggs have been found as late as June 14. This species was also found to excavate a new nest each season, and was not seen to take an old burrow, though many were often to be had in the same tree.

Catharista urubu. BLACK VULTURE.— The Black Vulture was found depositing her egg in more widely different situations than any other bird observed. The favorite site was a large hollow log, or a tree having a huge hollow base with an opening only a few feet up, so that the female might be able to jump out of the nest. Below are the conditions in which this species was found depositing its eggs:

One pair for three seasons nested in a large hollow sycamore log that lay across a small stream and served as a 'foot log' for a little-used path in a swampy wood. At least three people a day must have walked over the log as the Vulture sat calmly on her eggs. After the three years the log was not observed further. This situation was rather noisy for a bird so retiring in its nesting habits. March 16, 1901, a set of two eggs was found lying on the bare ground under a large tree that had been uprooted and had fallen so that its trunk made an angle of about fifteen degrees to the earth. The eggs were placed below this trunk, which was four and one half feet above them, and thus the slanting sun rays could have fallen upon the spot but for the heavy foliage of the wood. March 19, 1902, two sets of two eggs each were found on the naked ground in a dense cane thicket which formed the underbrush on a thickly wooded slope. Many vultures were evidently laying here as large numbers of them were in the trees overhead. But the thicket was so dense that it was next to impossible to get about to find the eggs.

March 23, 1902, a vulture's nest was seen in a very queer location. This was in a cave in the side of a steep clay bank which bordered a creek. The entrance to the cave was about seven feet

wide, it ran back six feet, and the top was two and one half feet above the floor. The two eggs lay in the back of this cave. It was claimed that the place had been occupied by this pair and their young reared in it for many seasons.

March 29, 1902, a Black Vulture's nest was found situated about sixty feet up in a huge poplar tree which stood in a cotton field that had been cleared for five years. In the crotch of this tree there was a large hollow running down about three feet and slightly sheltered above by the inclination of one of the limbs that formed the crotch. The eggs were deposited on the floor of this hollow. This was the only nest of this species that was observed more than a few feet from the ground. It is probable that the birds occupied this tree while it stood in the woods and when the land was cleared in 1897 the tree, being a large one, was deadened and left standing and the birds continued to use it as a nesting site.

I had now seen it well demonstrated that Vultures did use the same nest season after season even though the eggs were taken the previous year. But in the years 1901, 1902 and 1903 very interesting data were obtained relating to this phenomenon. March 16, 1901, I was directed to a hollow gum tree in which a Black Vulture was said to have reared its young for several years. The bird flew from the nest and exposed two eggs, which were taken and found to be in an advanced state of incubation. In December, 1901, and January, 1902, the tree was visited and the hollow was seen to be littered with fresh excrement and possessed a characteristic odor. It was evident that the birds frequented the place, and probably roosted there. March 8, 1902, she laid the first egg of the new set. This must have been two or three weeks later than her first egg of 1901; the much colder winter may have caused the delay. The second egg was laid on the 11th, three days later, and then the set of fresh eggs was taken from the nest. April 19, thirty-nine days after, on visiting the nest the vulture flew off and the hollow was found to contain another set of two eggs, which were taken and proved to be incubated about two weeks. This was the only case actually observed of the Black Vulture's laying a second set in one season. In December and January of the following winter the tree was visited

but appeared deserted; no excrement or other signs of the birds were to be seen. Several trips were made to the nest the following spring, 1903, but it was unoccupied. In March, 1904, the nest was found still vacant. From this action it was concluded that the birds had been rearing a second set each season after the first had been removed, and so were finally successful and continued to use the site the following year; but now when the second attempt was thwarted they deserted the nest entirely.

One may be certain that the same female laid the sets of consecutive years, as the eggs of one nest are always almost exactly alike in size, shape and markings; while the eggs of different nests show most striking varieties and thus make beautiful series for color variation.

Cathartes aura. TURKEY VULTURE. — This species in Mississippi lays much later in the season than the Black Vulture. Fresh eggs were found on April 25, 1902, and March 21, 1898, was the earliest set seen. Its nesting sites have, in only the few cases observed, been found very constant, being confined in three instances to the hollows of fallen logs, and in two others to the hollows in large stumps. Only five of its nests were seen and in four of these the birds nested for consecutive seasons just as the Black Vulture was found to do. In the southern part of the State the Black is much commoner than the Turkey Vulture, but in the east central portion they appear in about equal numbers.

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THE BIRDS OF WEST BATON ROUGE PARISH, LOUISIANA.

BY ANDREW ALLISON.

A FAUNAL or floral list of any locality, based on observations covering a limited space of time, is, after all, liable only to such objections as may be urged against anything finite. Nothing is complete; therefore I need not apologize at too great length for the small size of the list given in this article. The ground is sufficiently well covered by the statement that my observations in West Baton Rouge Parish extended over the period between November 1, 1902, and July 1, 1903; comparing these results with those obtained under similar conditions at New Orleans, some differences of interest were easily discernible, and I now present a synopsis of the notes written during the specified period.

The Parish of West Baton Rouge lies on the right bank of the Mississippi River, about eighty miles northwest of New Orleans, in latitude between 30° and 31° north, longitude between 91° and 92° west. The surface is generally perfectly level, and the soil is largely a black fertile alluvium; where crevasses have more or less recently occurred, a covering of silt, commonly known as river sand, has been deposited; and where this reaches its maximum thickness, a slightly rolling character is given to the surface.

The cultivation of sugar-cane has necessitated the clearing of the forests for some distance back from the river, which, for most of the length of the parish, runs close to the line of levees. In some places, however, a flood plain has been formed outside of the levee, varying in width up to a maximum of three miles; this formation is covered with a thick growth of willow (*Salix longifolia*) and cottonwood (*Populus deltoides*); and even where the plain is but a very few years old, the growth, here of cottonwood, there of willow, is very thick. In the older parts of the plain, honey locust (*Gleditsia triacanthos*), pecan (*Hicoria pecan*), deciduous holly (*Ilex decidua*), and some other species, are mingled with the cottonwoods, and the poison ivy (*Rhus radicans*) clings to almost every tree. The willows disappear as the ground rises.

It would be tedious and useless to enumerate the herbs that

make the margins of the fields and ditches more interesting to the botanist than to the agriculturist; but of the shrubs and trees something further should be said. Beginning at the levee, and going toward the woods, one traverses sugar-cane fields defined by drainage ditches, along which the common elder (*Sambucus canadensis*) is a characteristic shrub, often affording nesting sites to Red-winged Blackbirds. Tall hedges of Osage orange (*Toxylon pomiferum*) often form the boundary lines between one plantation and another, and these are rendered at once more impenetrable to man and more habitable for birds by a growth of blackberry (*Rubu sargutus*) and bamboo or cat-brier (*Smilax bona-nox* et *pseudo china*). Everywhere along the highroads and fences are dense hedges, sometimes of many hundred yards in length, of the Cherokee rose (*Rosa lævigata*); there is no plant more characteristic of the lower Louisiana fertile alluvial regions than is this rose.

There is much undergrowth in many of the small tracts of woodland encountered before one reaches the primeval swamp stretching behind all as interminable as the river running before; this is mainly bamboo, blackberry, switch-cane or cane-reed (*Arundinaria tecta*), *Ampelopsis cordata*, and supple-jack (*Berchemia scandens*). This last, with the bamboos, also climbs high, as do the trumpet-flower (*Tecoma radicans*) and the cross-vine (*Bignonia crucigera*). Poison ivy (*Rhus radicans*) is common everywhere, and its fruit is an important article of avian diet. The smaller trees and shrubs are haw (*Cratægus arborescens*), deciduous holly (*Ilex decidua*), and cornel (*Cornus stricta*); above these rise cottonwood (*Populus deltoides*), water oak (*Quercus nigra*), sweet gum (*Liquidambar styraciflua*), honey locust (*Gleditsia triacanthos*), sycamore (*Platanus occidentalis*), hackberry (*Celtis mississippiensis*), maple (*Acer drummondii*), and ash-leaved maple or box elder (*Acer negundo*).

In the deep swamp, though this is fringed with a heavy undergrowth, shrubs and vines are hardly present; Spanish moss (*Tillandsia usneoides*) hangs abundantly from the trees, of which the principal species are: ash (*Fraxinus lanceolata*), water oak (*Quercus nigra*), red oak (*Quercus rubra*), cypress (*Taxodium distichum*), and tupelo (*Nyssa aquatica*).

Certain parts of the parish, some miles back from the river, present an abruptly undulating surface; these regions are drained by small sluggish streams. The presence of water hickory (*Hicoria aquatica*) along these streams, and the local occurrence of certain dry-ground plants not found in the less well-drained swamps, such as hackberry, and the various shrubs and vines making up a heavy undergrowth, give a more or less definite regional value to the topographical characters.

With this hasty sketch of the parish and its floral characteristics completed, I shall proceed to the main part of this article — the annotated list of its birds.

1. **Larus atricilla.** LAUGHING GULL.

2. **Larus delawarensis.** RING-BILLED GULL.

To both these species, undoubtedly, belonged the few gulls that passed up and down the river between Nov. 14, 1902, and March 7, 1903. I was unable positively to identify these birds in any case, for a gull in mid-channel of a mighty river is an ambiguous object.

3. **Anhinga anhinga.** ANHINGA.— A not uncommon breeder in certain localities. Probably resident; but I saw none until March 20, 1903, when a single male passed over at Lobdell. Early in June I found the species breeding in the swampy wooded end of a lake on the grounds of the Louisiana State University, in East Baton Rouge Parish, and also in the deeper swamps of that vicinity; and later (June 29), I saw a male, evidently of a breeding pair, on a heavily-wooded tract outside of the levee on the right bank of the river.

4. **Aythya collaris.** RING-NECKED DUCK.— The species composing most of the flocks noted passing southward in November, and those commonly seen on the river during the winter. Probably the last of these were reported to me on March 18, 1903; some ducks were reported after this date, but they were probably teal.

5. **Querquedula discors.** BLUE-WINGED TEAL.— Like most of the water birds observed, this species is rather insufficiently authenticated. In the dusk of Nov. 12, 1902, a flock of small ducks passed me that I referred to this species. Owing to the fact that it is usually common in migration in April, I also refer to it a trio reported to me on April 11, 1903. What ducks may have passed besides these two species is indeterminate.

6. **Anser albifrons gambeli.** AMERICAN WHITE-FRONTED GOOSE.—A flock of about fifty, headed toward the north, made a noisy stay of a few minutes in the fog and rain of March 27, 1903. Their clamor was continuous; they settled first in the bare sugar-cane fields, then rose, flew over the levee, and sat for a few minutes on the water.

7. **Ardea herodias.** GREAT BLUE HERON.— It is hard to trace the

connection of this heron with this locality; it was present in November, 1902, its habits being noticeably crepuscular and nocturnal, at the ponds on the *batture*, as all land lying outside the levee is called. On January 29, 1903, I recorded its return; but from that date forward I have no records.

8. **Florida cærulea**. LITTLE BLUE HERON.— The date of arrival of this species was very late; I saw none until April 20, 1903, when about twenty passed up the river. Apparently some heronries are near Lobdell — the base of my operations — for late in June I found many birds, all but one in white plumage, a few miles west of that point. They had probably bred in inaccessible parts of the wide, wooded batture.

9. **Butorides virescens**. GREEN HERON.— Locally an uncommon species. I saw the first birds flying northward at dusk on April 2, 1903; I had thought, however, that I recognized the note in night migration on March 29. After this I had no proof of its presence in the vicinity until there came to my ears, on June 23, 1903, the cry of the Green Heron in the extensive swamps across the river from Lobdell.

10. **Nyctanassa violacea**. YELLOW-CROWNED NIGHT HERON.— A common spring migrant after March 22, 1903. According to many reports there are large heronries of the species not many miles west of Lobdell, and it is much too common a practice to despoil these heronries of the 'squabs,' or half-fledged young, to be used as food.

11. **Rallus elegans**. KING RAIL.— An individual of this species was taken alive by a settler in the swamp, and accurately described to me. I was unable to get the date of the capture. I thought I heard the cry of another on the night of June 20, 1903.

12. **Philohela minor**. AMERICAN WOODCOCK.— During the winter I spent in this parish, Woodcock were said to be abundant on the left bank of the river (East Baton Rouge Parish) and it is safe to record the species as a winter resident also in West Baton Rouge Parish.

13. **Gallinago delicata**. WILSON'S SNIPE.— Uncommon; it was the first bird — possibly omitting *Ardea herodias* — to show migrational activity. Two were seen Feb. 3, 1903, and another on Feb. 15; these were the only records.

14. **Actodromas maculata**. PECTORAL SANDPIPER.— A fairly common spring migrant; present in some numbers on March 19, 1903, and seen again on March 22.

15. **Actodromas minutilla**. LEAST SANDPIPER.— A late spring migrant; noted in small numbers from May 12 to May 25, 1903. The river, falling after its spring rise — of almost unprecedented extent in the season of 1903 — leaves on the batture a deposit of rich silt, and these mud-flats are most favorable to the presence of limicoline birds; here were seen Least, White-rumped, Semipalmated, and Spotted Sandpipers, and Semipalmated and Killdeer Plovers.

16. **Actodromas fuscicollis**. WHITE-RUMPED SANDPIPER.— A flock of about fifty appeared in the mud-flats May 14, 1903, and by May 17, the

last day of their stay, it had decreased to twenty. The sound of the feeding flock was remarkably similar to that made by a larger number of Pipits.

17. **Ereunetes pusillus**. SEMIPALMATED SANDPIPER.— Appeared May 14, 1903, and was present intermittently until May 28. Not in large numbers at any time.

18. **Bartramia longicauda**. BARTRAMIAN SANDPIPER.— A rather common spring migrant, preferring here, as everywhere, the fields to the mud-flats. First seen March 19, 1903; last seen May 15.

19. **Actitis macularia**. SPOTTED SANDPIPER.— This is the only Sandpiper breeding in this locality, and the last to leave in the fall. The first arrived March 31, in 1903, and I saw two on Nov. 5, 1902.

20. **Squatarola squatarola**. BLACK-BELLIED PLOVER.— There seems no doubt that to this species is referable a plover seen with Killdeers on Nov. 2, 1902. Its notes also pointed to this conclusion.

21. **Oxyechus vociferus**. KILLDEER.— A common and most characteristic winter resident; one can hardly get beyond reach of its cries by day, except by going far back from the river; and even at night it often utters querulous, restless notes.

The winter residents left, in 1903, before the middle of March; but the species undoubtedly breeds not far away, probably to the northeast; for its presence was reported to me in the late summer, after my departure. One was present, but did not mix with the other waders, May 14–15, 1903.

22. **Ægialitis semipalmata**. SEMIPALMATED PLOVER.— A few present May 15, 1903, on the mud-flats with the sandpipers.

23. **Colinus virginianus**. BOB-WHITE.— A common resident.

24. **Zenaidura macroura**. MOURNING DOVE.— A common resident. Very gregarious from my arrival on Nov. 1 (and doubtless a month previous to that date), until February. The first record of the song is Feb. 21.

25. **Cathartes aura**. TURKEY VULTURE.— A very common resident.

26. **Catharista urubu**. BLACK VULTURE.— Perhaps three times as abundant as the preceding.

27. **Ictinia mississippiensis**. MISSISSIPPI KITE.— A not uncommon breeder, arriving late. The date of arrival in 1903 was May 9.

28. **Circus hudsonius**. MARSH HAWK.— A fairly common winter resident; last seen Mar. 31, 1903.

[28.1. **Accipiter velox**. SHARP-SHINNED HAWK.— I noted this species in December, 1897, on the campus of the Louisiana State University, in East Baton Rouge Parish; but I have no records from the right bank of the river.]

29. **Accipiter cooperi**. COOPER'S HAWK.— Probably in some degree resident; but I noted it only as a rather infrequent winter resident.

30. **Buteo borealis**. RED-TAILED HAWK.— A fairly common winter resident; last seen March 17, 1903.

31. **Buteo borealis harlani.** HARLAN'S HAWK.— I saw this species only on March 12 and 16, 1903, while on the way to and from New Orleans; on these dates it was not uncommon. But from Port Allen, Lobdell, and the districts west of these points, it was not recorded.

32. **Buteo lineatus.** RED-SHOULDERED HAWK.— Possibly both this form and *B. l. alleni* were present; certainly *B. l. lineatus* was. I found it a common resident, beginning to nest in January.

33. **Archibuteo lagopus sancti-johannis.** AMERICAN ROUGH-LEGGED HAWK.— On two successive days — April 6 and 7, 1903 — I saw at some distance, beating over the fields, a large, light brown hawk which could not have been anything but this species.

34. **Falco columbarius.** PIGEON HAWK.— A not uncommon winter resident.

35. **Falco sparverius.** AMERICAN SPARROW HAWK.— A very common winter resident, subsisting very largely on grasshoppers. I saw more after March 30, 1903. In common with certain others, this species regards latitude less than other considerations in its choice of breeding-places; in sandy or clayey regions, wooded with conifers (*Pinus tæda*, *P. australis*, *et P. cubensis*), it remains throughout the year in latitudes lower than that of this parish.

36. **Pandion haliaëtus carolinensis.** AMERICAN OSPREY.— I saw a single one sailing up the river May 15, 1903.

37. **Asio accipitrinus.** SHORT-EARED OWL.— I saw this species only once; this individual I flushed from a grassy ditch in a canefield, on March 26, 1903. Subsequently I found remains of another.

38. **Syrnium varium.** BARRED OWL.— Writing to Dr. Fisher, of the Biological Survey, for definite information as to the distribution of *Buteo lineatus alleni* and *Syrnium varium alleni*, I was informed that it was Mr. Ridgway's opinion that typical specimens could not be found outside of the Florida peninsula. Therefore I refer the owls of this region to *S. v. varium*. This species is resident, and rather common in the deep swamp. The swamps on the left bank of the river being denser, it is more common there.

39. **Megascops asio floridanus.** FLORIDA SCREECH OWL.— A very common resident in suitable localities — copses, and thick hedge-rows containing trees. Very difficult to see, but very often heard.

40. **Coccyzus americanus.** YELLOW-BILLED CUCKOO.— A common summer resident; in 1903 it was very late in arriving in this parish, though not abnormally so at New Orleans. None were present until May 8, but the next day the species was fairly common.

41. **Ceryle alcyon.** BELTED KINGFISHER.— Remarkably uncommon. None present during the winter, and one on March 28, 1903, and another on April 5, were the only individuals I saw.

42. **Dryobates villosus audubonii.** SOUTHERN HAIRY WOODPECKER.— A common resident.

43. **Dryobates pubescens.** DOWNY WOODPECKER.— I have recorded

this bird as common in only one spot,— a thin wood of willow and cottonwood, in a recent deposit of silt on the batture, about six miles above Lobdell.

44. **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER. — A rather common winter resident; not observed after March 7, 1903.

45. **Ceophlœus pileatus.** PILEATED WOODPECKER.— Fairly common, and resident, in the deep swamps.

46. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER. — A common resident in suitable places, such as clearings containing large dead trees, and groves of large trees near houses.

47. **Centurus carolinus.** RED-BELLIED WOODPECKER.— Rather common everywhere in winter; retiring to the deeper swamps to breed.

48. **Colaptes auratus.** FLICKER.— Common in winter, increasing in numbers in March. I saw none after March 28, 1903.

49. **Antrostomus carolinensis.** CHUCK-WILL'S-WIDOW. — Doubtless breeds in the drier parts of the parish; I observed it at intervals after April 18, 1903, but saw none later than May 9.

50. **Chordeiles virginianus.** NIGHTHAWK.— Of this form, undoubtedly, were the transients observed in late April and early May. I first noted the species April 22, 1903. After the middle of May very few nighthawks were observed, though a casual trip showed them to be abundant in East Baton Rouge Parish early in June. Perhaps these breeding birds were *C. v. chapmani.*

51. **Chætura pelagica.** CHIMNEY SWIFT.— An abundant summer resident; the first were seen March 26, 1903.

52. **Trochilus colubris.** RUBY-THROATED HUMMINGBIRD. — Abundant as a migrant, and common in summer. The first — a male, as usual — was observed April 3.

53. **Tyrannus tyrannus.** KINGBIRD.— Common in spring, much less so in summer. First seen April 4.

54. **Myiarchus crinitus.** CRESTED FLYCATCHER.— A fairly common summer resident, arriving, in 1903, on April 11. This, like very many of my other dates, is very late, according to New Orleans standard, which set the date of arrival at about March 26 (in 1903, March 28).

55. **Sayornis phœbe.** PHŒBE.— A common winter resident; the last left about the middle of March.

56. **Contopus virens.** WOOD PEWEE.— Fairly common as a summer resident; the first was noted April 14.

57. **Empidonax virescens.** GREEN-CRESTED FLYCATCHER.— A common summer resident; the commonest of all the flycatchers observed. First observed April 11.

58. **Cyanocitta cristata.** BLUE JAY.— A common resident.

59. **Corvus brachyrhynchos.** AMERICAN CROW.— A common summer resident.

60. **Corvus ossifragus.** FISH CROW.— Infrequent early in the winter; common, however, in February, and remaining to breed on the wooded battures.

61. **Dolichonyx oryzivorus**. BOBOLINK.— A flock of about fifty was present from April 30 to May 2, 1903. The males were in almost perfect plumage, and in fine voice. I shall quote here from my note-book: "Presently I heard *Chink, chink!* and the Bobolinks began to rise from the weeds, a few at a time; they were of both sexes, and the males were in the beautiful nuptial plumage. . . . Considering the striking character of their coloration, their concealment was admirable. . . . Evidently they were feeding on the ripe seeds of *Senecio lobatus* and *Sonchus asper*, and the stomach I examined contained the seeds of *Chærophyllum tainturierii*, I think, besides fragments of beetles. Suddenly one of the males began to sing, and soon the concert was glorious."

62. **Molothrus ater**. COWBIRD. — A common resident.

63. **Agelaius phœniceus**. RED-WINGED BLACKBIRD. — It seems to me probable that to this form are referable the blackbirds of this parish; they are unquestionably larger than breeding birds from the Mississippi coast and the region about New Orleans. They breed in small colonies among the shrubbery and thick weeds on the banks of the cane-field ditches. The species is resident, but a great influx from the southeast began on January 7, 1903; these were mostly transient, however, and the majority probably passed northward, though doubtless many returned to the coast marshes to breed. It therefore appears probable that in winter both *A. p. phœniceus* and *A. p. floridanus* are to be found here.

64. **Sturnella magna argutula**. SOUTHERN MEADOWLARK. — A common resident.

65. **Icterus spurius**. ORCHARD ORIOLE. — The most abundant summer bird of this region. The adult males began to arrive April 1 — ten days later than at New Orleans in the same season — and were common by April 5; on April 8 I saw the first females and immature males, and from this time on the birds were very abundant. On a day in May I counted thirty-one nests in a single homestead, where nearly all the trees were recently planted and still small. The song is unfailing all day long, from five in the morning to six, and sometimes later, in the evening.

66. **Icterus galbula**. BALTIMORE ORIOLE. — An uncommon summer resident; indeed, the only proof I have to offer of its being a breeder here is furnished by two nests found during the winter. Both of these were in cottonwoods on the batture; I knocked down one and satisfied myself of its identity. This species is of very local distribution in Louisiana in summer, being known to breed, I believe, only in East and West Feliciana and East and West Baton Rouge Parishes. I noted the first migrant in 1903 on April 20.

67. **Euphagus carolinus**. RUSTY BLACKBIRD. — Very common in the late winter, entering largely into the composition of all the motley flocks of blackbirds. It is late to arrive in the fall; I saw none before November 17. At New Orleans it is usually very late to leave in spring, but here I saw none after March.

68. **Quiscalus quiscula**. PURPLE GRACKLE. — More or less typical of

this form are all the grackles breeding in this locality. Mr. F. M. Chapman pronounced this verdict upon a series which I collected for him. The birds are less frequent in winter; in their breeding habits they are gregarious to a considerable extent.

69. **Quiscalus quiscula æneus.** BRONZED GRACKLE. — Winter resident, or at least it is a regular winter visitor. Some of the breeding specimens closely approach it, but are distinctly referable to the preceding. I took a typical example on January 24, 1903.

70. **Pœcetes gramineus.** VESPER SPARROW. — An uncommon winter resident. The last was seen March 20, 1903.

71. **Passerculus sandwichensis savanna.** SAVANNA SPARROW. — A common winter resident, becoming very abundant in spring. By the middle of April the maximum abundance is reached, and from this time on for nearly two weeks very many are present, singing often from trees and fences. After the last of April, as a rule, few are seen; but in 1903 the species was locally common until May 2, and the last lingered until May 15.

72. **Coturniculus savannarum passerinus.** GRASSHOPPER SPARROW. — Probably an uncommon breeder, though I observed none later than May 2. The first arrived — or was seen, for this may be a winter resident also — on April 4.

73. **Coturniculus leconteii.** LECONTE'S SPARROW. — I saw no birds that I could positively identify as this species until April 7, 1903, when I took one and saw three others; after this I noted them at intervals until April 25.

74. **Zonotrichia albicollis.** WHITE-THROATED SPARROW. — An abundant winter resident; last seen April 26.

75. **Spizella pusilla.** FIELD SPARROW. — Abundant in East Baton Rouge Parish, but of singularly restricted distribution in the parish under consideration. I first heard its song on April 5, 1903 — though it is doubtless resident — and from that time until the end of my stay I was always sure of finding it fairly common — but only in the spot where I first heard it. At no time did I see or hear a single individual four hundred yards from the metropolis of the species, — a cleared pasture grown up again in bushy young plants of honey-locust and bounded by fields and hedges.

76. **Melospiza georgiana.** SWAMP SPARROW. — An abundant winter resident; frequenting mainly thickets and hedge-rows, but spreading also into the grassy fields, where, in the ditches, according to my note-book, "These birds behaved most strangely; I could hear them creeping under the matted grass, squeaking like mice, and often splashing through the water like little musk-rats." The last were seen May 2, 1903.

77. **Pipilo erythrophthalmus.** TOWHEE. — A rather common winter resident; less common in summer.

78. **Cardinalis cardinalis magnirostris.** LOUISIANA CARDINAL. — Mr. Outram Bangs (Proc. N. Eng. Zoöl. Club, Vol. IV, pp. 5–7) has founded, on

the basis of twelve specimens collected by me in West Baton Rouge Parish, the subspecies named above. This is in accordance with the opinion expressed by Mr. Ridgway (U. S. Nat. Mus. Bull. No. 50, Part I, p. 641): "The bill is, in fact, decidedly larger in these Louisiana birds than in any other specimens from the United States east of Arizona, and I have little doubt that it will eventually become necessary to separate the Louisiana bird as a different subspecies." The bird is an extremely abundant resident.

79. **Zamelodia ludoviciana**. ROSE-BREASTED GROSBEAK. — A rare spring migrant; I saw one feeding on the fruit of the wild mulberry (*Morus rubra*) on May 2, 1903.

80. **Guiraca cærulea**. BLUE GROSBEAK. — Probably breeds rarely; it is an uncommon spring migrant, and I saw none before May 2, which date is abnormally late for its arrival.

81. **Cyanospiza cyanea**. INDIGO BUNTING. — An abundant spring migrant, a much less common breeder. First seen April 14.

82. **Cyanospiza ciris**. PAINTED BUNTING. — A very common breeder, first seen on April 11. The conditions affecting this species and the preceding are reversed in East Baton Rouge Parish, where the Indigo Bunting is a much more conspicuous summer bird.

83. **Spiza americana**. DICKCISSEL. — A rather common late spring migrant, first seen April 30. It is uncommon as a breeder, and at least in the territory between Lobdell and Port Allen, appears to be confined to the small area occupied by *Spizella pusilla*.

84. **Piranga erythromelas**. SCARLET TANAGER. — A rather uncommon spring migrant, present in 1903 from April 25 to May 9.

85. **Piranga rubra**. SUMMER TANAGER. — A common breeder; first seen April 11.

86. **Progne subis**. PURPLE MARTIN. — An abundant breeder; here, as everywhere in Louisiana and Mississippi, a very early arrival. The first — males, as usual — were seen Feb. 17. Young and old began to gather into summer flocks about May 15.

87. **Hirundo erythrogaster**. BARN SWALLOW. — Common in spring, but does not remain to breed. First seen April 4; last seen May 27.

88. **Iridoprogne bicolor**. TREE SWALLOW. — This species appears not to be present here in winter, though a trip to New Orleans in late December revealed its presence there. I saw none here after the first of December. The first spring migrants appeared on Feb. 27, and the last left May 2.

89. **Stelgidopteryx serripennis**. ROUGH-WINGED SWALLOW. — A spasmodically abundant summer resident, always appearing to be in migration. First seen March 23, and present in rather small numbers until late in May; after that it was nearly absent until the middle of June, when many began to pass westward; and the majority of those seen after this were moving westward up the river, in straggling flocks.

90. **Ampelis cedrorum**. CEDAR WAXWING. — Perhaps it would be

unsafe to say, after one season's observations on this erratic bird, that it is a very uncommon winter resident. I found it so, however, since I saw it but once during the winter; but a few were present March 7, and May 2–9 they were feeding on mulberries.

91. **Lanius ludovicianus.** LOGGERHEAD SHRIKE.— A common winter resident, dwindling almost to rarity in summer.

92. **Vireo olivaceus.** RED-EYED VIREO.— A common summer resident; first seen March 28.

93. **Vireo gilvus.** WARBLING VIREO.— A rather common summer resident, restricted almost entirely, in its choice of nesting sites, to groves near dwellings. First observed April 9.

94. **Vireo solitarius.** BLUE-HEADED VIREO.— Only one record, and that a somewhat doubtful one; the record in question was obtained Dec. 6, 1902. It is a regular winter resident near New Orleans.

[94.1. **Vireo flavifrons.** YELLOW-THROATED VIREO.— Early in June Mr. H. H. Kopman and I observed this species on two consecutive days in East Baton Rouge Parish; on the second occasion we found young being fed by the parents.]

95. **Vireo noveboracensis.** WHITE-EYED VIREO.— I did not observe this species during the winter, though it is almost invariably noted at least once in each winter at New Orleans. It was first noted March 7, and proved to be a very common summer resident.

96. **Protonotaria citrea.** PROTHONOTARY WARBLER.— A common breeder; first seen April 25.

It is in the movements of the warblers that I find most disparity between my records for the spring of 1903, and those of Mr. H. H. Kopman made at New Orleans in the same season. The species now under consideration arrived at the latter station nearly a month in advance of my west Baton Rouge Parish record, and *Wilsonia mitrata* was common at New Orleans by March 20, while it did not appear at my station until April 25! On the other hand, *Icteria virens* appeared here April 11, two days earlier than it had ever been recorded at New Orleans! With such contradictory records as these, and only one season's observations from this parish to go upon, no satisfactory comparison can be made; and a certain amount of emphasis must be laid upon the fact, stated to me by Mr. W. W. Cooke, of the Biological Survey, that the migrations of warblers in the spring of 1903 were remarkably irregular.

97. **Helmitheros vermivorus.** WORM-EATING WARBLER.— Seen only once — April 11. Possibly breeds.

98. **Helminthophila bachmanii.** BACHMAN'S WARBLER.—I have one record of this rare warbler; I saw one on May 9, in a thick wood with rank undergrowth.

99. **Helminthophila celata.** ORANGE-CROWNED WARBLER.— An uncommon winter resident; one taken Jan. 17, 1902, and another seen Jan. 22.

100. **Compsothlypis americana ramalinæ.** WESTERN PARULA WAR-

BLER.— A common summer resident; first noted March 7 (at New Orleans March 11). Undoubtedly *C. a. usneæ* is often present in migration, and to distinguish the two forms in recording arrival and departure dates is almost impossible; but I am quite sure that a fine male I saw on March 17 was of the latter form; the large size was very apparent.

101. **Dendroica æstiva.** YELLOW WARBLER.— Not common during the spring of 1903 (first noted at New Orleans April 14, that date being unusually late); I thought often that I heard it, but it eluded me until May 2. After this I saw it occasionally and finally supposed that May 17 had brought the last. But a singing male on June 16 seems sufficient evidence that this warbler breeds in the parish, as it is known to do in St. Tammany Parish (Beyer, Proc. La. Soc. Nat., 1897-99 (rep. 1900) p. 38).

102. **Dendroica coronata.** MYRTLE WARBLER.— An abundant winter resident. The last was seen in the city of Baton Rouge, on the left bank of the river, on April 19 (April 27, New Orleans).

103. **Dendroica virens.** BLACK-THROATED GREEN WARBLER.—Seen only once, May 9 (transient at New Orleans, April 26–27).

104. **Dendroica discolor.** PRAIRIE WARBLER.— I am almost positive that an elusive warbler seen on April 17 was of this species; behavior and appearance alike pointed to this conclusion.

105. **Seiurus aurocapillus.** OVEN-BIRD.— One seen May 9.

106. **Geothlypis formosa.** KENTUCKY WARBLER.— A common summer resident. First seen April 11, and common from that date.

107. **Geothlypis trichas ignota.** SOUTHERN YELLOW-THROAT.—Common and resident.

108. **Icteria virens.** YELLOW-BREASTED CHAT.— An abundant summer resident; first seen April 11. Loquacious to an extent that makes its presence known wherever it occurs; this is one of the most characteristic breeding birds of the region.

109. **Wilsonia mitrata.** HOODED WARBLER.— A common summer resident, but not nearly so widespread as about New Orleans. First seen April 25 (common at New Orleans, March 21).

110. **Setophaga ruticilla.** AMERICAN REDSTART.— Only one seen, April 25 (transient at New Orleans, April 26–27).

111. **Anthus pensilvanicus.** AMERICAN PIPIT.— A common winter resident; last seen May 2. It is fond of feeding at the water's edge, and often covers the levee for many yards with busy flocks.

112. **Anthus spragueii.** SPRAGUE'S PIPIT.— I saw three on the batture at Lobdell, Nov. 3, 1902. It is an uncommon, but not irregular, winter resident at New Orleans.

113. **Mimus polyglottos.** MOCKINGBIRD.— A very common resident. I first heard the song on Jan. 17, and singing was general by Feb. 15.

114. **Galeoscoptes carolinensis.** CATBIRD.— A fairly common spring migrant; I noted one, singing a little, on April 25, and some were present at intervals after this until May 11; they fed much on the wild mulberries.

115. **Toxostoma rufum.** BROWN THRASHER.— A fairly common winter resident. It possibly breeds, though I saw none after April 13.

116. **Thryothorus ludovicianus.** CAROLINA WREN.— A very common resident.

117. **Thryomanes bewickii.** BEWICK'S WREN.— A rather common winter resident. In February and early March the song is very frequent and delightful; I saw none after March 9.

118. **Troglodytes aëdon.** HOUSE WREN.— A rather uncommon winter resident. Last seen April 18.

119. **Olbiorchilus hiemalis.** WINTER WREN.— Saw one March 7, 1903.

120. **Cistothorus stellaris.** SHORT-BILLED MARSH WREN.— Winter resident; an interesting species, frequenting hedge-rows and heavily grass-clad ditch-banks. In one of the latter situations I took a specimen as late as May 12.

121. **Bæolophus bicolor.** TUFTED TITMOUSE.— Not common, noticeably less so than at New Orleans. Resident.

122. **Parus carolinensis.** CAROLINA CHICKADEE.— Rather uncommon in winter, and even less conspicuous in summer.

123. **Regulus satrapa.** GOLDEN-CROWNED KINGLET.— A common winter resident. Last seen March 7, when it was in song.

124. **Regulus calendula.** RUBY-CROWNED KINGLET.— A common winter resident; much more persistent than the preceding. The last were seen April 25.

125. **Polioptila cærulea.** BLUE-GRAY GNATCATCHER.— Resident; not infrequent in winter, common in summer.

126. **Hylocichla mustelina.** WOOD THRUSH.— A fairly common summer resident; much less so, however, than in East Baton Rouge Parish. First noted April 7.

127. **Hylocichla fuscescens.** WILSON'S THRUSH.— I found this species fairly common on May 9, 1903.

128. **Hylocichla aliciæ.** GRAY-CHEEKED THRUSH.—Common on May 9.

[128.1. **Hylocichla guttata pallasii.** HERMIT THRUSH.— I am not certain that my records of this species are authentic; I wrote them down without hesitation; but as they were based only on the notes — the familiar *cluck*,— and as I afterwards detected cardinals uttering a similar note, I must question their validity.]

129. **Merula migratoria.** AMERICAN ROBIN.— Uncommon until March 7, the last day on which I saw the species; on that occasion I "found myself in the midst of a great flock of perhaps three hundred all 'singing and murmuring in their feastful mirth,' some on the ground, some in trees, and all making as much noise as so many blackbirds" (note-book).

130. **Sialia sialis.** BLUEBIRD.— Resident in the upper (western) parts of the parish; it appears remarkably local in its distribution, and occurs near Lobdell only as a transient. Common where it breeds.

GENERAL NOTES.

Curlew Sandpiper in New Jersey.— On July 29, 1904, a friend shot at Long Beach, Barnegat Bay, N. J., a strange sandpiper. It was forwarded to me, but unfortunately, the weather being exceedingly warm, the bird was spoiled beyond the possibility of skinning when I received it. I recognized it at once as *Erolia ferruginea*, evidently an adult male in full plumage. The rufous color of the breast and throat was very deep and rich. I have never seen any sandpiper, not even of this species, so highly and beautifully colored. I have the specimen preserved in alcohol.—JOHN LEWIS CHILDS, *Floral Park, N. Y.*

Occurrence of the Spotted Sandpiper in Kent, England.— It may be of interest to readers of 'The Auk' to learn that two examples, a male and a female, of the Spotted Sandpiper (*Totanus macularius*), were shot in Romney Marsh, Kent, on May 5, 1904. I had the pleasure of handling them in the flesh while they were still in fresh condition. The birds were exhibited at a meeting of the British Ornithologists' Club on May 18, 1904 (*cf.* J. L. Bonhote, Bull. B. O. C., Vol. XIV, pp. 84, 85.)— W. RUSKIN BUTTERFIELD, *St. Leonards-on-Sea, England.*

Killdeers at Allen's Harbor, R. I.— From August 16, 1904, until September 11, I stayed at Allen's or Quiduessett Harbor, North Kingston, R. I., five miles east of East Greenwich. There I found in an open closely cattle-cropped field a flock of about a dozen Killdeers (*Oxyechus vociferus*). They inhabited this field where doubtless they bred, making frequent visits to the salt marshes about the harbor. Mourning Doves were common with them, visiting the cornfields instead of the marshes. A trustworthy farmer tells me that they have bred in the pasture for years commonly. He has often seen their young.— REGINALD HEBER HOWE, Jr., *Concord, Mass.*

Note on the Generic Names Bellona, Orthorhynchus, Chrysolampis, and Eulampis.— *Bellona* Mulsant and Verreaux (Mem. Cherb. XII, 1866, 219) is preoccupied by *Bellona* Reichenbach (Natürl. Syst. Vögel, 1852, p. xxx) for a fossil. It may be renamed **Microlyssa**, with *Trochilus exilis* Gmelin as the type. *Orthorhynchus* Lacépède (Tabl. Oiseaux, 1799, 9) which has sometimes been used for the above genus cannot stand, as no type was specified by the author and the diagnosis is not diagnostic. Froriep (Dumeril's Analyt. Zool. 1806, 47) gives *Trochilus minimus* and *mosquitus* of Linnæus under the genus *Orthorhynchus* and is apparently the first author to include any species under this term, though the name had previously been used by several authors. If we take *Trochilus minimus* Linn. as the type of Brisson's genus *Mellisuga* it would leave *Trochilus mosquitus* Linn. as the type of *Orthorhynchus.*

Boie (Isis, 1831, 546) gave five species under his genus *Chrysolampis*, as follows: 1. *Troch. moschitus* Linn., 2. —— *elatus* Gm., 3. —— *cyanomelas* Gm., 4. —— *guianensis* Gm., 5. —— *carbunculus* Gm. Now Nos. 2, 4, and 5 are synonyms of No. 1, and No. 3 is a synonym of *Trochilus jugularis* Linn., and as it has been shown above that *Trochilus moschitus* (or *mosquitus*) Linn. is the type of *Orthorhynchus* it leaves *Trochilus jugularis* Linn. as the type of *Chrysolampis* Boie.

Boie (Isis, 1831, 547) gave four species under his genus *Eulampis*, as follows: 1. *Tr. violaceus* Gm., 2. —— *jugularis* Linn., 3. —— *auratus* ——, 4. —— *niger* P. Max. Nos. 1 and 3 are synonyms of No. 2, and as that is already the type of *Chrysolampis* it leaves *Trochilus niger* P. Max. as the type of *Eulampis* Boie. — J. H. Riley, *Washington, D. C.*

On the Proper Name of the Tody of Jamaica. — Linnæus in the 10th edition of the 'Systema Naturæ,' p. 116, named the Jamaican Tody, [*Alcedo*] *Todus*. In the 12th edition of the same work, p. 178, when he instituted the genus, *Todus*, he renamed it, [*Todus*] *viridis*, the name it has since gone under, but in view of the above fact it should be known in the future as *Todus todus* by those zöologists who regard the 10th edition of the 'Systema Naturæ' as the starting point of zoölogical nomenclature. — J. H. Riley, *Washington, D. C.*

The Bobolink in Colorado.—In his bulletin on Birds of Colorado Professor Cooke notes five records of the Bobolink (*Dolichonyx oryzivorus*) in the State, including eight birds in all, and in his second supplement gives two more records of one bird each. Other records may now be added. One bird was taken at Boulder about two years ago by Mr. L. C. Bragg, the specimen bearing no date and no record having been made of it. One was seen by the writer east of Boulder on July 9, 1903. One was reported on the University campus at Boulder by Dr. J. R. Brackett, on July 30, 1903. Ten males and several females were seen by the writer and Mr. H. F. Watts in marshy ground just east of Boulder on May 24, 1904, and about the same number on May 30 and 31. I was accompanied on the last trip by Professor C. Juday. I have heard rumors of their occurrence here before, and am inclined to suspect that they may be found in a restricted area every year.— Junius Henderson, *Boulder, Colorado.*

Henslow's Sparrow in Munroe County, Pa.—While on a walk with Wm. J. Sewill, between Stroudsburg and Mount Pocono, Monroe Co., Pa., May 29 of this year, I heard the note of Henslow's Sparrow (*Coturniculus henslowii*) and upon investigation at least two pairs were found. They were in a field, well up on the mountain just above Henryville, acting as usual and uttering their *che-ticks* from time to time.— William L. Baily, *Philadelphia, Pa.*

Breeding of the Dickcissel in New Jersey.— On July 3, 1904, while passing along a country road near Plainfield, New Jersey, I heard an unfamiliar and very unmusical song coming across the field. It soon ceased but before I had started on again it suddenly came down from almost over my head with such distinctness that I guessed the singer's name and, looking up, saw a Dickcissel (*Spiza americana*) perched on a telegraph wire above. After singing for a while, during which I had an excellent view of him through my glass, he flew back over the field. As he was evidently at home I decided to make the most of my opportunity, so spent the greater part of the day there. To my great satisfaction I soon found that the Dickcissel had a mate. She was shy and most of the time kept well hidden in the grass. The male sang persistently from three widely separated perches on as many sides of the field, — the lower branches of a large black walnut, the top of an apple tree and the telegraph wires over the road. The field in which the birds were located was a grass field of mixed timothy and red-top with considerable red clover in parts and with a sprinkling of fleabane and black-eyed susans.

On the following day I visited the place with three ornithological friends. We saw both the old birds and in addition were delighted to find two young birds, one of which I secured. This specimen is a female in juvenal plumage with the first feathers of the winter plumage beginning to appear. The wings are not full grown and the tail is less than two-thirds of the full length. There cannot, of course, be the slightest doubt that these young birds were bred in this locality. Neither of the parents were taken, and it is hoped that they will return next year. As I had passed this field many times in the last few years it is unlikely that any Dickcissels nested in it before this season.

Mr. S. N. Rhoads allows me to state that he believes a specimen or two of this species was taken near Philadelphia this spring. As these are the first records for New Jersey or eastern Pennsylvania since 1890, they evidently indicate a tendency of the Dickcissels to return to their old haunts. The breeding record is the first for New Jersey or eastern Pennsylvania since 1879, although a few pairs doubtless bred as late as 1881. It is also apparently the first record for the entire Atlantic coast plain since 1884, when the species is recorded as breeding at Chester, South Carolina. There is little doubt, however, that the bird observed by Dr. J. Dwight, Jr., at Kingston, New York, on June 5, 1896, was breeding.

Mr. Rhoads wishes me to state that he has made a careful comparison of eastern and western Dickcissels without finding the slightest difference between them.— W. De W. Miller, *Amer. Mus. Nat. Hist., New York City.*

Another Nest of Kirtland's Warbler.— On June 15, 1904, I found *Dendroica kirtlandi* in full song and breeding in Oscoda County, Northern Michigan. I took both parents, the nest, and four fresh eggs. The nest

was sunk in the ground at the foot of a small oak tree in vicinity of some small jack pines (*Pinus banksiana*). The vegetation was very heavy, and the nest was well concealed by deer-vine grass and other weeds. It was composed of dry grass, weed stems and pine needles. The male visited the nest while I was watching. The eggs have very thin shells, with very little gloss, and are spotted and blotched, mostly at top, with pink and chocolate spots. Average size, .73 × .55 of an inch.

The song of the male as follows: *Trp, trp, terp, terp, terp, ser-wit, er, wer,* all but the first two notes uttered rapidly. Besides this song, the prevalent one, the male has two other shorter song-notes. The female has a chirp like that of a sparrow. The male is a beautiful bird and a fine, incessant singer during the breeding season. The female sits very close on her eggs and can be caught on the nest with the hands. The birds are not wild and will allow close observation. They inhabit the high jack pine ridges, and seem to feed principally on an insect that infests the jack pine, occasionally flying to the ground for other food. The bird is called the Jack Pine Bird in northern Michigan.

As the nests are well concealed, and the female is a close sitter, it is a very difficult matter to find them, as the male will sing a long distance from the nest. This set is, I believe, the first perfect set of this bird's eggs known to science.—EDWARD ARNOLD, *Battle Creek, Mich.*

An Interesting Variation in Seiurus.— A diagnostic character of this genus is the absence of white (or other colored) spots from the tail feathers. In all descriptions of *Seiurus*, and in all keys including it, this feature is set forth in practically the same language as in the following extract from Ridgway (1902, p. 429): "Inner webs of the lateral rectrices without white terminal spot." Thus it may be concluded that this character is essential to a definition of the genus, or in other words, is a generic character. It is this fact that lends a greater interest to the following record.

A specimen of *Seiurus noveboracensis notabilis* in the collection of the University of Indiana (No. 128) has distinctly marked, white, terminal spots on the outermost and next to the outermost rectrices of the right side, and indications of similar markings on their fellows of the left side, in the form of correspondingly placed narrow edgings of white. The facts that these markings are paired, and that they are in precisely the position of the blotches on the rectrices of most of our warblers with normally parti-colored tail-feathers, remove them entirely from the category of those irregularly shaped, white patches, which are often found on the primaries or on the tail-feathers, or in fact on any of the feathers of many species of birds.

This change from a character of its own genus to that of another must be considered as having a deeper, a phylogenetic significance. The color arrangement of *Seiurus* tends to the primitive or streaked type. The

only recognition mark thus far developed is the conspicuous superciliary line. The abnormal pattern of the rectrices of the specimen under consideration may be regarded therefore as identical in nature with those variations that must have taken place many generations ago, in the ancestors of species that now have a full complement of well-developed recognition marks.

Probably many, many variations of this kind have occurred, and have failed to be perpetuated, for one reason or another, but who can say at what moment such a variation will be seized upon by natural selection and developed into a new racial character!

The specimen discussed above was collected May 14, 1875, at Indianapolis, Indiana, by Dr. David Starr Jordan.— W. F. McAtee, *Washington, D. C.*

Warblers and Grapes.— At Bloomington, Indiana, during the fall of 1903, from the 24th to the 29th of September, I observed the Tennessee (*Helminthophila peregrina*) and the Cape May (*Dendroica tigrina*) Warblers piercing or 'sucking' grapes. The habit has been frequently recorded for the former, but I believe it is the first time it has been for the latter.

Prof. F. H. King has spoken of the trait in the Tennessee Warbler (Wis. Geol. Rep., 1886), and has protested against condemnation of the bird for this practice which is prevalent for so small a portion of the year. It is this line of argument that I wish to support.

It is evident that the birds can do no harm to grapes in their summer homes. In the parts of their summer range where grapes are found, these are not ripe until the birds have begun their northward movement. Thus it is only during the limited period in which they are present as migrants in a given locality that it is possible for them to injure the grape crop. This period may be as long as six weeks, but in all probability it is generally shorter, and does not include, at the most, more than two weeks during which the species occurs abundantly. If noteworthily harmful, it is only during this very brief period that their depredations would be important.

Careful observations were made at all opportunities during the period mentioned. The behavior of the birds and the condition of the grapes both before and after the birds' visits were noted. Specimens were taken while in the vines and their stomach contents ascertained. Many of the grapes were preserved in alcohol, just as they were left by the warblers.

Both species were constantly busy catching insects on the vines, and on a walnut and some appletrees near by. Frequently, however, they dashed into the vines and thrust their bills quickly into a grape. Sometimes they withdrew them quickly; again they poked around in the interior of the grape a little, and always after these attacks, they lifted their heads as in drinking. This action suggested a reason for piercing the grapes, that I am satisfied is the true one, that is, the obtaining of liquid refreshment.

From an examination of the grapes preserved, as well as from the investigation of the stomach contents, it was seen that no pulp nor seeds were taken. The grapes show simple openings made by the thrusts, or larger rents due to the drying in consequence of the original wounds. No seeds were disturbed and the pulp had dried down around them in a hard mass. Thus it is shown that grapes cannot be included in the *food* of the Cape May or Tennessee Warblers.

Some of the openings, triangular in shape, have a strip of grape-skin extending across near the base, showing that the bird thrust its open beak into the fruit, probably in an effort to quench an impelling thirst. In the present instance, thirst seems plainly to be the motive for attack. This might be averted entirely by the presence of a bountiful supply of water.

In the arbor under observation, which was a small one, scarcely a grape and not a cluster was missed. The damage, however, was inconsiderable as the birds did not commence to use their appropriated share of the crop until the owner had taken all he desired. However, they might not be thus considerate at all times, but the chances are that in the majority of cases the injury, on account of the late time at which it is done, would be very small.

Prof. King found plant-lice and small heteropterous insects in stomachs of the Tennessee Warbler, and Prof. B. H. Warren reports the food of the Cape May to be larvæ, flies, plant-lice and small beetles.

The results of the investigation of the stomach contents of birds taken at the time of the observations noted above, follow: Cape May Warbler (one specimen), 8 *Typlocyba comes*, an especial pest of the grape, "an exceedingly abundant and destructive" jassid; 3 *Aphodius inquinatus* and one Carabid, kinds which may be considered neutral economically, but, in case of a departure from their ordinary diet, would on account of vegetarian tendencies become injurious; 1 *Drasterias* sp. (click-beetle), 1 tortoise-beetle, 1 flea-beetle (*Haltica chalybea*), all injurious beetles, the last of which is a particular enemy of the grape, which "appears on the vine in early spring and bores into and scoops out the unopened buds, sometimes so completely as to kill the vine to the roots," and later in the season in both larval and adult stages feeds upon the foliage, and if abundant "leaves little but the larger veins"; 1 *Notoxus* sp., a weevil, with all the undesirability characteristic of the creatures bearing that name; 2 ants, harmful, if for no other reason than harboring plant lice; and a vespoidean hymenapteron (wasp) of neutral significance.

Tennessee Warbler (one specimen), *Typhlocyba comes* (1) again, and another jassid or leaf hopper; 6 caterpillars which were doing all in their power to eat up the leaves remaining on the vines; 2 Lycosidæ (spiders); a bug (*Corizus*), another weevil, and one parasitic hymenopteron.

This last item is the only portion of the food of these two individuals

that could have served man better outside of a bird, and it constituted only 5% of the contents of one stomach, or only one-fortieth or one-fiftieth of the food of the two. Otherwise the insects eaten were either neutral or potentially or actually harmful. A great per cent of the whole was in the last class, and some of the species eaten are tremendously injurious to grape culture.

The feeding habits of the birds may, from the present knowledge, be declared practically entirely beneficial. In return it seems not too much to expect that we should without complaint furnish, for a few days in the year, the drink to wash the great numbers of our insect enemies down to their destruction; and to consider these two little fellows as among the worthiest as they are among the prettiest of our warbler friends.— W. F. McAtee, *Washington, D. C.*

The Raven in Southern New Hampshire, and Other Notes.—On the afternoon of July 4, 1903, while all the land was dim with fire-cracker smoke, a solitary Raven, coming who-knows-whence and going who-knows-whither, wandered over the rocky ridge of Mount Monadnock, in southwestern New Hampshire. I was sitting outside my camp, midway of the mountain ridge, and several times dimly heard the wanderer's gruff, inarticulate croak, without recognizing it. In Norway or Sardinia, where I have known *Corvus corax* familiarly, this sound would have been instantly intelligible to me; but here, in the Massachusetts hill country of southernmost New Hampshire, unvisited by ravens for many a year, I was slow to grasp its meaning. Two companions were sitting near me, and I credited them with having facetiously uttered the ribald grunts. Nor did these companions at once arouse my interest by exclaiming: "See that crow over there!" I could n't see him without moving, and sat still. But a peculiar and vaguely familiar heavy 'swishing' of wings, coupled with the news that the crow was persistently hovering over our provisions, brought me to my feet to have a look at the bird myself. Stepping around the cabin I beheld, not a crow, but a big, dingy raven, heavy-headed, huge-beaked, and deeply emarginate-winged. He was raspingly beating the air, thirty feet above my outspread provisions and cooking utensils, and scarcely ten paces from where I stood.

Just so I have seen the European Raven flopping about over our vulture-baiting donkey carcass, in the hot fields of Sardinia,— hour-long, day after day. The scene was vividly recalled to me by this strayed carrion-biter of the North American wilderness. He was so strangely unsuspicious that he not only did not veer off when I appeared around the corner, but actually let me walk almost directly under him before he showed symptoms of alarm, and remitted his scrutiny of the victual-strewn ground. Then he started away to the northward along the mountain ridge, flying rather slowly and laboriously, with but little sailing, and presently disappeared behind a rocky knoll, on the northwest side of the mountain.

Later that same afternoon, at Dublin, near Monadnock's northern base, my sister saw some crows persecuting a larger bird, which looked to her somewhat like a hawk, but was entirely black. Probably this was my raven again. Where this raven came from no one can say, but it is certain that he had wandered far, and must wander far again to find country in which he could feel at home.

Strangely enough, he looked like a young bird, in the almost brownish dullness and sheenlessness of his plumage. But it is scarcely possible that he was a bird of the year, considering the date — July 4.

Almost every summer I find Yellow-bellied Flycatchers — one pair at least — breeding in a forest swamp close under the northern base of Monadnock, at an altitude of about 1400 feet. I found them first about six years ago, and my most recent records are 1902 and 1903 (June and July). This year (1904) I have n't looked for them. The morass in which they live extends over fifty or more acres, and is a typical north New England forest bog, wet and cool and mossy; full of sphagnum, pitcher-plants, creeping snowberry (*Chiogenes*), etc. The trees, mainly water-stunted spruces and balsams, are bearded heavily with usnea moss, in which many Northern Parula Warblers build their nests. All the more boreal warblers of the region breed here in unusual abundance, and among them are always one or two pairs of Northern Water-Thrushes.

I believe this is the only positive breeding record for the Yellow-bellied Flycatcher south of the White Mountains, and it is possible that the bird does not summer anywhere in the intervening ninety or a hundred miles. Monadnock is to a noteworthy extent a Canadian or semi-Hudsonian zone 'island.' But there is a narrow ribbon of very similar country straggling northward from it, as is proved by the distribution of certain birds. The Olive-backed Thrush, for instance, which nests commonly in the spruce woods high up on the mountain, occurs also, as a less common summer resident, at its northern base, and at various further points directly northward. The valley-ward extension of this thrush's breeding range here actually overlaps the upward extension of the Wood Thrush, though these species are both rare at their line of meeting, and are probably never to be found actually together, since the Olive-backed sticks to conifers and the Wood Thrush favors deciduous groves.

Birds representing the Hudsonian and birds representing the Carolinian border of the Transition zone breed at almost the same altitude within the limits of a single town (Dublin) at the north side of Monadnock. For the Hudsonian member we have the Yellow-bellied Flycatcher (perhaps as fair a case as Bicknell's Thrush, which Massachusetts bird men delight to call Hudsonian), and for the Carolinio-transitional Henslow's Sparrow and the Short-billed Marsh Wren. The sparrow is very rare in Dublin, though common in the lower and more alluvial meadows eight miles to the northeast (Hancock and Bennington). Mr. Hoffmann finds it a rare breeder in the Alstead Hills, about twenty miles northwest of Dublin. There also, both he and I have found the Yellow winged Sparrow breeding.

As for the Short-billed Marsh Wrens, I have for two successive summers (1902 and 1903), found a single pair in a big, marshy brook-meadow on the eastern side of the Dublin ridge (the western slope of the Peterboro valley water-shed). This marsh lies in the upper border of a large extent of fertile meadow-country, very different from the Canadian belt north of Monadnock, which includes the Yellow-bellies' swamp; although the wrens' breeding place is only about two hundred feet lower than the flycatchers'. Bitterns are common in the Marsh Wrens' swamp, and one or two pairs of Black Ducks and thrice as many Wood Ducks still nest along the stream which feeds it. Owing to the deplorable New Hampshire law which permits the shooting of Wood Ducks and Upland Plovers after August 1, our scanty remnants of these two much-decimated species are in yearly danger of annihilation. I speak for the Monadnock region only. The Upland Plover (*Bartramia*) still breeds here and there near Monadnock, both in meadows and in upland pastures, but its numbers have been greviously reduced.

Northern Pileated Woodpeckers are tolerably common on and near Monadnock, and they seem to be increasing rather than falling off. In 1902 my father and I found a Pileated's nest, seventy feet up in a dead yellow birch stump. The three or four young left the nest about June 12.

The summer avifauna of the Monadnock region is really unusually rich for north-central New England. In one early summer season I have found one hundred and six breeding species on the north side of the mountain, all but two or three of them within the limits of the town of Dublin.

The remarkably bitter winter of 1903–'04 was fully heralded in New England by a copious and early influx of northern birds, as everyone remembers. At Monadnock the warning was exceedingly pronounced. On October 6, I found a Hudson Bay Titmouse low down on the north side of the mountain, in a band of Chickadees. The little fellow, who revealed himself to me by his notes, responded vehemently to my 'squeaking,' and flitted about within a few yards of my head, so that I had a perfect chance to inspect him.

Pine Grosbeaks appeared on October 18, and were at once abundant, continuing so throughout the autumn and early winter (I left the region in December). Snow Buntings appeared on the same day, and large flocks of Redpoll Linnets arrived a few weeks later. Siskins and both kinds of Crossbills were also more or less common through the last half of the autumn.

During a long and heavy northeasterly storm, which ended on October 12 or 13, Dublin Pond was visited by at least eight kinds of sea-birds; namely, the three species of Scoters, a Herring Gull, a Phalarope (probably the Northern,— we did not shoot it), the Red-throated Loon, and the Horned and Holbœll's Grebes. Of the Black Scoters there came at least a hundred, mainly in one big flock; of the White-winged about

twenty; of the Surf not more than ten, and of the Red-throated Loons a single pair. The Grebes were in small scattered companies, numbering in all about twenty Horned and twelve or fifteen Holbœll's, all in dingy winter plumage. We shot a few of the Holbœll's, and found them to vary much in size, and in the length and color of the bill, but scarcely at all in plumage. Both kinds of Grebes lingered on the lake for several days, after the other refugees had gone. On one morning near the end of the storm (Oct. 12), all the Ducks and Grebes and the two Divers were together,— in our little mountain pond-hole barely more than a mile long. —GERALD H. THAYER, *Monadnock, N. H.*

RECENT LITERATURE.

The International Catalogue of Scientific Literature. — The first annual issue of the International Catalogue of Scientific Literature, comprising the literature of the year 1901, consists of a volume for each of the seventeen branches of Science into which scientific literature is divided for the purposes of the Catalogue. These branches are indicated by the letters A to R, Zoölogy being branch 'N' of the series. A copy of Volume N[1] having been officially sent to 'The Auk' for review, we have endeavored to give it the careful consideration its great importance demands.

The 'International Catalogue of Scientific Literature' is an outgrowth of the well-known 'Catalogue of Scientific Papers' published by the Royal Society of London, which in twelve large quarto volumes covers the period 1800–1883. A Catalogue covering the period 1884–1900 is now in preparation, to be issued under the same auspices. These volumes give only the titles of papers, but a subject index to the first series, "which will serve as a key to these volumes and also form an independent record, is in an advanced state of preparation."

The possibility of preparing a complete index of current scientific literature, to include subject indexes as well as titles of papers, began to be considered by the Royal Society in the year 1893. As it was apparent that the resources of the Society were inadequate for such an undertak-

[1] International Catalogue | of | Scientific Literature | First Annual Issue | N | Zoology | — | Published for the International Council | by the | Royal Society of London | London: | Harrison and Sons, 45, St. Martin's Lane | — France: Gauthier-Villars, Paris | Germany: Gustav Fischer, Jena | — | Vol. XVII: 1904 (February) — 8vo, Pt. I, Authors' Catalogue, pp. xvi + 368; Pt. II, Subject Catalogue, pp. 369–1528.

ing, international coöperation seemed necessary, and was sought. The proposition met with such general approval that steps were soon taken to secure an International Conference of Delegates to be appointed by the different Governments. Such a Conference was held in London, July 14–17, 1896, and was attended by delegates from twenty-one countries. The plan adopted provided for the collecting of the material by local organizations established for the purpose in the various countries, the final editing and publishing of the Catalogue to be entrusted to a Central International Bureau, under the direction of an International Council. It was agreed to establish the Central Bureau in London. Schedules of classification were later prepared by this International Committee, and submitted to a second International Conference held in London October 11–13, 1898. The schedules and principles of classification reported by the Committee were adopted, and the settlement of final details of the schedules was referred to a Provisional International Committee. This Committee met in London August 1–5, 1899. The financial part of the undertaking was also adjusted, and the Royal Society was "requested to organize a Central Bureau, and to do all necessary work, so that the preparation of the Catalogue might be commenced in 1901." A third International Conference was held in London in June, 1900, and the final details for the publication of the Catalogue by the Royal Society were definitely arranged.

The supreme control of the Catalogue is vested in an International Convention, which is to meet "in London in 1905, in 1910, and every tenth year afterwards, to reconsider, and, if necessary, to revise the regulations for carrying out the work of the Catalogue," etc. "The materials out of which the Catalogue is formed are to be furnished by Regional Bureaus." These have been established to the number of thirty. "Each complete annual issue of the Catalogue is to consist of seventeen volumes, the set to be sold to the public for £18"; the price of individual volumes will vary according to their size, "from about ten to thirty-nine shillings."

Having thus given a brief history of the inception and progress of the work, we will proceed to a consideration of Volume N, covering the literature of Zoölogy for the year 1901, premising, however, that the department of ornithology will be taken as a criterion of the work. The volume consists of two parts, which may be bound separately or together, three title-pages being furnished, and the pagination being continuous. Part I consists of about 380 pages, of which the Preface (briefly summarized above) occupies eight (vii–xv), and the explanatory introduction and an index (repeated in four languages) about 80, followed by an 'Authors' Catalogue' of 259 pages (pp. 109–368). This includes about 6000 titles, arranged alphabetically by authors. The titles are each followed by "Registration numbers" in brackets, these varying from one to four or more, according to the nature of the paper.

Part II, consisting of 1151 pages, contains the 'Subject Catalogue,' a

list of the journals cited, with their abbreviated titles (pp. 1485–1512), and the 'Topographical Classification,' the latter in four languages (pp. 1513–1528). All titles given in Part I are here reprinted, classified according to subject matter, and alphabetically arranged by authors under each division. These divisions are grouped under (1) 'Comprehensive Zoölogy,' and (2) 'Special Zoölogy.' Special Zoölogy is divided into 29 sections, with the following 8 subdivisions under each section: Comprehensive and General Works; Structure; Physiology; Development; Ethology; Ætiology; Geography; Taxonomy and Systematic. Each subdivision is designated by a four-figure registration number.

The classification here adopted has been the subject of more or less unfavorable criticism; the principal objection to it, however, seems to be that it is different from any of those previously employed, and is therefore to this extent inconvenient without any obvious advantage in the innovations. To some extent the present Catalogue is a duplication of work already being well done, and the only reason for its existence would seem to be that it should be more nearly complete and more satisfactorily arranged than any of those which occupy the same field.

In order to test its completeness reference was first made to a publication near at hand — the 'Bulletin' of the American Museum of Natural History for the year 1901, which resulted in the surprising discovery that of 22 zoölogical articles contained in that volume the titles of only 16 appear in the zoölogical volume of the International Catalogue, more than one third having been omitted. This is the gravest case of omission thus far noticed, but a small percentage of omission has been found in every case where a test has been made, the omissions often including some of the most important papers in the volumes examined. Only the general articles of 'The Auk' are listed, the scores of (often important) minor articles being omitted, though uniformly entered in the other current bibliographies.

Under Aves we find no reference to the journal 'Aquila,' nor is it listed in the general list of journals at the end of the volume; titles of important papers in the leading ornithological journals are often omitted, while the minor journals are either very imperfectly indexed or wholly ignored. In the case of authors, of 14 papers by R. B. Sharpe listed in the Zoölogical Record only 2 appear in the International Catalogue; even his 'Hand-List of the Genera and Species of Birds,' of which Vol. III appeared in 1901, is not mentioned. Stark's 'The Birds of South Africa,' of which Vol. II appeared in 1901, is omitted, as is Ridgway's 'Birds of North and Middle America,' of which Part I came out in 1901; nor is there any mention of any of Mr. Ridgway's papers for that year. Dubois's 'Synopsis Avium,' of which four fasciculi were issued in 1901, is also absent; and so on through a long list of works and papers by prominent authors, too numerous to be enumerated here.

Turning to the 'List of New Genera and Species,' it is found that the same incompleteness is conspicuous; in the families Fringillidæ, Icteridæ,

and Corvidæ, for example, one fourth to one third of the new genera, new species, and new subspecies are omitted, and the titles of the papers in which they are described are also absent from the general list of titles. As another test, it is found that under Anatidæ there are 39 references in the Zoölogical Record and 52 under Anseres ('special') in Vol. N of the International Catalogue; but of these 24 relate to a single work — Finn's 'How to know the Indian Ducks' — overlooked in making up the Z. R.; excluding this work leaves the comparison as 39 in Z. R. against 28 in I. C. In the latter a titmouse (*Pœcile salicaria bianchi*) is included under Anseres and omitted under Paridæ. Further, there are only 3 references in the I. C. under Icteridæ against 16 in Z. R., with the consequent omission in the I. C. of 2 new genera and 12 new species and subspecies.

Turning now to 'Geographical Distribution,' and taking Africa (with Madagascar) for comparison with the 'Ethiopian Region' in the Z. R., we find 16 titles under each, but of these 32 titles 12 of those in the Z. R. are not in the I. C., and 11 of those in the I. C. are not in the Z. R. under 'Ethiopian Region,' but several of them occur in the Z. R. list of titles. Several of the I. C. titles are only remotely pertinent to the subject under which they are ranged. The space occupied by the 16 references under Africa in the I. C. is nearly a full page; in the Z. R. only 4 lines, consisting merely of cross-references to the list of titles.

In the section Aves, as in the other sections, the titles of papers relating to its subject are reprinted from the general list of titles in Part I, and here segregated in alphabetic order. They are again reprinted in full under each of the various subheadings of Aves to which they may relate, necessitating their repetition from three to six or eight times, at great expenditure of both space and funds. The subdivisions under the section Aves are very numerous, as follows:—

Comparative and General Works, divided into: General, Treatises, Economics, Technique, History, Biography, Bibliography, the last three collectively forming one division.

Structure, divided into: General, Comparative Anatomy, Special Anatomy and Histology, Nervous System and Organs of Sense, Osteology, Alimentary System, Circulatory and Respiratory Organs, Urogenital System, Special External Characters, Organs of Uncertain Nature.

Physiology, divided into: General, Production of Caste, Function of Special Structures, Metabolism, Physiological Chemistry, Environmental Effects.

Development, divided into: General, Ogenesis and Ovum, Embryology, Postembryonic Ontogeny, Changes during Life.

Ethology, divided into: General, Habits, Migration, Hibernation, Parental Relations, Sexual Relations, Oviposition, Voice, Luminosity, Pelagic Animals, Instinct, Psychology, Parasitism, Colour and Habits, Defensive Processes, Resemblances, Utility and Harmfulness.

Variation and Ætiology, divided into: General, Substantive Varia-

tion, Teratological Variation, Bionomic Variation, Statistical Variation, Mathematical Variation, Crosses and Hybrids, Evolution.

Geographical Distribution, divided into: General, The Earth as a Whole, Scandinavia, Russia in Europe, German Empire, Holland, British Islands, France, Portugal, Italy, Switzerland, Austria-Hungary, Balkan Peninsula, Mediterranean and Islands, Baltic and Islands, Asia, Asiatic Russia, China and Dependencies, British India, Malay Peninsula and Archipelago, Baluchistan, Asiatic Turkey and Arabia, Africa, Mediterranean States, N. E. Africa, The Soudan, West Africa, Congo State and Angola, East Africa, South Africa, Madagascar, North America, Alaska, Canadian Dominion West, Canadian Dominion East, United States, N. E. United States, S. E. United States, W. United States, Central and South America, Mexico, West Indian Islands, Venezuela, Colombia and Ecuador, Peru, Argentina and Uraguay and Paraguay, Australasia, New Guinea and Islands from Wallace's Line, Australia, Queensland, New South Wales, Victoria, West Australia, New Zealand, Arctic, Arctic Ocean, Islands North of Europe and Asia, Atlantic, North Atlantic Ocean, Canaries, Azores, Madeira, Cape Verde (these four as one division), Pacific, Behring Sea and Islands, Sandwich Islands, Ladrone, Pelew, Caroline and Marshall Groups, with other Islands N. of Equator and W. of 180°, Galapagos Islands, Antarctic, Islands to Southward and Southeast of New Zealand.

Taxonomy and Systematic, divided into: General, Casuarii, Æpyornithes, Pygopodes, Impennes, Tubinares, Steganopodes, Herodiones, Anseres, Alectorides, Fulicariæ, Limicolæ, Gaviæ, Alcæ, Pterocletes, Columbæ, Accipitres, Crypturi, Galli, Coccyges, Psittaci, Coraciæ, Striges, Anisodactylæ, Caprimulgi, Cypseli, Heterodactylæ, Pici, Passeres. The titles under each of these groups are divided into General and Special, except in the case of Passeres, where the titles are arranged under the headings of families, and again subdivided under General and Special. Under Special the matter is arranged alphabetically by genera, the technical name being the title, followed by the name of the author in heavy type, and the reference. Then follows the 'List of New Genera and Species.'

This system of minute classification is, to a degree, a convenience, at the cost, however, of much space and the multi-reprinting of many of the titles,[1] and renders almost unnecessary the annotation of titles of papers of a mixed or more or less general character. The distribution of titles under these numerous subdivisions is quite open to criticism, and even the utility of many of the subdivisions may be questioned, but lack of space forbids more than a brief illustration of these general state-

[1] Thus the title of Buturlin's paper on the Wild Geese of the Russian Realm is entered in full no less than *seven* times, instead of once, with cross-references under Anseres and the Faunistic divisions.

ments. Under the division 'History, Biography, Bibliography' of 'Comprehensive and General Works' are only five titles, one of which is bibliographical, three are biographical, and the fifth might be placed under both history and biography; while under 'General' of the same division, which has 73 titles, four or five should be assigned to bibliography, or at least repeated there (under the 'system' provided), while a large proportion of them should go exclusively under the various geographic subheadings or under migration, or should at least be repeated there, but are not; while one (the journal 'Psyche') belongs to Entomology and not to Ornithology at all, there being no reference to birds at any of the several pages cited. In the general list of titles (only a small proportion of those that should be listed) are to be found the titles of a considerable number of biographical papers that are not entered under 'Biography.' Furthermore, there is no division for Bird Protection, which has grown to be an important subject the world over, and is surely ornithological. A few titles are included among the 73 under 'General,' but only a very small proportion of the literature of the subject is covered by them. William Dutcher's important report on the Protection of Gulls and Terns is cited in the general list of titles, but not under 'Economics' nor under Gaviæ, under both of which it should be entered; and so on in almost numberless cases.

Our examination of Volume N of the International Catalogue has led to a rather careful examination of current works of a similar character, and therefrom have arisen many surprises. No specialist can make use of any of them without soon becoming aware of their many shortcomings, particularly their many and serious sins of omission. Only the literature of ornithology for the year 1901 was taken into consideration in this connection. The International Catalogue is found to contain about 950 titles, against about 850 in the Zoölogical Record for this period. But fully one half of the former are not contained in the latter, while one fourth of those in the latter are not in the former. The two together contain about 1200 different titles, of which one half are lacking in one or the other, and of which less than one half are found in both works. The Carus and Field 'Bibliographia Zoologica' for the years 1901 and 1902 (Vols. VI and VII) contain about the same number of ornithological titles for the year 1901 as are contained in Vol. N of the International Catalogue, but among them are many not given in either the Zoölogical Record or the International Catalogue. The card system of Field's 'Concilium Bibliographicum,'— based, so far as author's titles go, on the 'Bibliographia Zoologica,'— renders it too difficult to critically compare the ornithological titles for 1901 with the other current bibliographies, but it is evident that the 'Concilium' contains many important titles that are omitted from both the others, and must therefore lack many that the others contain. As, however, the entries relating to any given year extend usually over several years in the gathering and publication, it is quite certain that the number of ornithological titles above assigned to

the Field system is much too small, since it includes a conspicuously large number not in either of the others. As regards the comparative utility of these several bibliographies, it must be conceded that thus far the 'Concilium Bibliographicum' stands — in view of the explanatory annotations on the Concilium cards, and the broader scope and relatively greater completeness of this system, — in the first rank of modern zoölogical bibliographies, and that it has earned, and should receive, sufficient support to guarantee its permanence.

From the examinations made in this connection it is evident that the ornithological literature for the year 1901 consists of not less than 1500 titles that are properly citable in bibliography; and, taking the four formal bibliographies for that year collectively, probably nearly all have been gathered in, but no one of them shows the degree of completeness that should be attained. Doubtless perfection in a field so difficult to entirely compass is beyond the possibility of attainment, owing to the virtual impossibility of bringing together all of the widely scattered and often obscurely published works and papers relating to the subject.

The defective handling of Volume N, so far as its incompleteness is concerned, is apparently not chargeable to any one of the Regional Bureaus, since the defect is widely distributed, and apparently general. Neither is it the fault of the system of the work, but to the carelessness of individual workers to whom the regional work has been assigned. The intended scope of the work seems ample, judging by the character of the publications cited, but probably, in addition to much carelessness, a wide range of individual judgment is exercised on the part of the original gatherers of the material, as regards papers that are considered citable. Doubtless we may safely hope that the character of the Catalogue will improve as the work progresses, and especially as it is stated that "Any portion of the literature of 1901 which may not have been dealt with in the first annual issue will be included in the corresponding volumes of the second annual issue of the Catalogue."

The method of citing the place of publication of the individual papers is so definite and satisfactory that no improvement can be suggested, but some changes might be made that would greatly facilitate the use of the Catalogue. The registration numbers and other arbitrary signs are doubtless indispensable, but it is too much to expect that the casual user of the work can always carry in mind their significance; and even were this practicable some other page headings, in a volume of over a thousand pages, than the sectional numbers, which mean nothing until the system has been mastered, and the specialist has memorized those that relate to his own field, would be of great convenience. The subject matter of each page can easily be indicated in the page heading. Thus if, in Aves, instead of simply the numbers 5803, 5807, 5815, etc., at the outer top corner of the first seventy pages there were added Aves: Titles; Aves: General Works; Aves: Structure; Aves: Physiology, and so on, it would save the user much time in turning these seventy pages to find some particular

division of the subject matter embraced therein. And then for the next thirty pages, if, instead of merely 5831, there were added the name of the group, as Aves: Casuarii; Aves: Anseres; Aves: Passeres, etc., it would certainly save the average user much vexation of spirit. To further facilitate use there should also be a separate index for each 'branch' under 'Special Zoölogy,'— one for birds, another for mammals, and so on through the 29 sections, giving page references to each of the subdivisions of the subject matter. The indexes should be placed at the end of the sections, so that in this way each section would begin on an odd page instead of in the middle of a column, as now, without any marked break to catch the eye.— J. A. A.

Cooke's 'Some New Facts about the Migration of Birds.'[1] — Professor Cooke's 'new facts' are presented under the following subheadings (1) 'Introduction'; (2) 'Causes of Migration'; (3) 'How do Birds find their Way?'; (4) 'Casualties during Migration', (5) 'Distance of Migration'; (6) 'Routes of Migration'; (7) 'Are Birds Exhausted by a Long Flight?' (8) Relative Position during Migration'; (9) 'Relation of Migration and Temperature'; (10) 'Variation in the Speed of Migration'; (11) 'The Unknown.' The 'Introduction' states briefly the present resources of the Biological Survey for investigations of the migration of North American birds, after nearly twenty years spent in the accumulation of data. As to causes of migration, the author states: "The broad statement can be made that the beginnings of migration ages ago were intimately connected with periodic changes in the food supply, but this motive is at present so intermingled with others unknown, or but imperfectly known, that migration movements seem now to bear little relation to the abundance or absence of food."

Under 'How do Birds find their way?' he admits that "among day migrants sight is probably the principal guide," and that it "undoubtedly plays a part in guiding the night journeys also"; but he believes they also possess a power, whatever its nature, that "may be called a sense of direction," which serves to guide them unerringly over ocean wastes. He further says: "A favorite belief of many American ornithologists is that coast lines, mountain chains, and especially the courses of the larger rivers and their tributaries, form well-marked highways along which birds return to previous nesting sites." That many birds reared in Indiana, Illinois, and elsewhere to the northwestward visit South Carolina and Georgia in their fall migration has, however, long been known. "The truth seems to be," he affirms, "that birds pay little attention to

[1] Some New Facts about the Migration of Birds. By Wells M. Cooke, Assistant Biological Survey. Yearbook U. S. Depart. Agriculture for 1903, pp. 371–386.

natural physical highways, except when large bodies of water force them to deviate from the desired course." It does not follow, however, that because all the birds of a district do not concentrate and move in masses along river valleys and coast lines that they are not guided in their courses by the prominent features of the landscape, even in the case of those species which pass from the upper Mississippi Valley to the coast of South Carolina and Georgia. Nor is it true that river valleys, etc., do not form favorite migration routes for many species of birds. So far as our acquaintance with the literature of the subject goes, it is not the "favorite belief," etc., that the prominent physical features of the continent "form well-marked highways" along which migratory birds travel, but merely constitute the landmarks by which their journeys are guided.

Under 'Routes of Migration' much new information is presented, the direct outcome of the author's investigations. He specifies several routes by which North American birds reach northern South America. The first is by Florida, the Bahamas, and the Greater and Lesser Antilles. Of 50 New England species that pursue this route the greater part do not pass beyond Porto Rico. "Only adventurers out of some 6 species gain the South American mainland by completing the island chain." A more direct route is by Florida, Cuba, and Jamaica, taken by about 60 species, of which about half stop in Cuba, the rest passing on to Jamaica, while only about 10 of these leave Jamaica to cross the 500-mile stretch of open water to reach South America. Of these the Bobolink is so conspicuous by its numbers, in comparison with its fellow travellers, "that the passage across the Caribbean Sea from Cuba to South America may with propriety be called 'bobolink route.'"

The main highway to South America is from northwestern Florida across the Gulf of Mexico over a sea course of 700 miles. The Cuba-Yucatan route, formerly supposed to be a favorite one, involving only a 100-mile sea flight, Mr. Cooke affirms is taken by only "a few swallows, some shore birds, and an occasional land bird storm-driven from its intended course, while over the Gulf route, night after night, for nearly eight months in the year, myriads of hardy migrants wing their way through the darkness toward an unseen destination." Still further west, the birds of the Plains and Rocky Mountains which choose Mexico and Central America for their winter home reach these countries by a leisurely land journey. It would be interesting to know to what extent some of these generalizations rest on negative evidence, for stations along the eastern coast of Mexico, including Yucatan, where observations have been made bearing on the migration of birds are certainly few and far between, and cover only short periods.

An interesting feature of the paper is the account of the migration routes of the Golden Plover, illustrated by a map showing the breeding area of the species and its two very distinct routes of migration—a direct sea course in the autumn, from Nova Scotia to Venezuela, and the interior

spring route, which crosses North America almost centrally from the coast of Texas to the Arctic Barren Grounds.

Most important of the 'new facts' are the statistics given under 'migration and temperature,' and under 'variations in the speed of migration' over different portions of the continent, in accordance with the change in the direction of the isotherms. The explanation given of the increase in the distance of daily travel after passing the northern boundary of the United States of such birds as visit Alaska and that portion of the Dominion of Canada west of the Makenzie Valley, is eminently reasonable and satisfactory. The subject is clearly illustrated by means of a map showing the 'Speed of the Robin in Migration,' which indicates not only the acceleration of the progress of the Robin as it advances northward, but also the position of the isotherm of 35° at monthly periods from January 15 to June 15.

Finally, 'The Unknown'! Among the chief mysteries that await solution are the winter haunts of the Chimney Swifts, which disappear from our ken the moment they leave the northern coast of the Gulf of Mexico in the fall until they reappear there the last week in March; another equally deep mystery is the winter whereabouts of the Bank Swallow. The route of the Cliff Swallow from Brazil to California, and how the Red-eyed Vireo reaches southern British Columbia at the same time it reaches Nebraska, and before they have appeared in any of the intervening country, are among the problems, says Mr. Cooke, "that continually vex and fascinate the investigator." It is certainly encouraging to see the "mystery of mysteries" of the old Gätkean and allied points of view dwindling to such small proportions in the eyes of modern investigators who trust to facts rather than to figments of the imagination in their attempts to elucidate the problems of migration. — J. A. A.

G. M. Allen's 'The Birds of New Hampshire.'[1] — In this excellent paper of 200 pages, an attempt has been made, says the author, "to bring together a list of the species of birds known to have occurred within the State of New Hampshire during historic times, together with a general account of their distribution, faunal position, times of migration, and, in the case of the rarer species, a detailed list of the known instances of occurrence." While published records have been utilized, "a considerable body of unpublished facts relative to the birds of the State is here included," partly based on the author's own observations and partly on those of other ornithologists who have made generous contributions from their notes, and for which due acknowledgments are made. "The sequence of names and their spelling," the author states, "are strictly

[1] The Birds of New Hampshire. By Glover Morrill Allen. Proc. Manchester Institute of Arts and Sciences, Vol. IV, Pt. I, 1902 (1903), pp. 23–222. Published about June 15, 1904.

those of the American Ornithologists' Union, instead of those used by Mr. R. H. Howe, Jr., and myself in the 'Birds of Massachusetts' [*cf.* 'Auk,' XVIII, July, 1901, p. 278]," since "it is believed that the use of the order more commonly adopted will make the list more convenient as a working basis for more complete catalogues." The list now given is considered as only a preliminary one, to be further perfected, especially in respect to the water birds.

Ten pages are devoted to a review of the literature of the subject, including a literal reprint of Jeremy Belknap's list of New Hampshire birds, published in 1792, in the third volume of his 'History of New Hampshire,' with pertinent comment and the equivalent modern names of the identifiable species, — all but about seven or eight out of a total of 130 names. A résumé is given of the later contributions to New Hampshire ornithology, together with a bibliography (pp. 194–204), numbering about 150 titles.

A discussion of 'The Faunal Areas of New Hampshire' occupies about eighteen pages (pp. 36–53). This includes a short account of the topography of the State, and an attempt to define in considerable detail the life zones. These include (1) the upper austral (= Carolinian Fauna), which, however, does not really reach New Hampshire, and is only suggested by a few sporadic instances of the occurrence of two or three 'upper austral' species; (2) the transition (= Alleghanian Fauna), which occupies the river valleys up to 600 feet, and under favorable local conditions up to 1500 feet, and the low area along the coast; (3) the Canadian (= Canadian Fauna), which includes a large part of the forested portions of the State; (4) the Hudsonian (= Hudsonian Fauna), limited to a few small isolated areas in the extreme northern part of the State, but, so far as known, not inhabited by any strictly Hudsonian species of birds; (5) the 'arctic-alpine,' restricted to the treeless barren summits of the highest peaks of the White Mountains, and also without any distinctively arctic species of birds. In describing and defining the limits of these several faunal areas the characteristic species of plants, mammals, and reptiles, as well as of birds, inhabiting them are mentioned, and much interesting information is incidentally included respecting the extension of the ranges of a number of birds through the clearing away by man of the heavy primeval forest.

There are also (pp. 54–61) extended remarks on certain phases of bird migration in the State, especially on the periodic incursions of the Red Crossbill and the White-winged Crossbill.

The very fully annotated list (pp. 62–186) includes 283 species, of which 29 are added in a postscript on the basis of a paper by Mr. Ned Dearborn on the 'Birds of Durham and Vicinity,' which appeared while Mr. Allen's paper was passing through the press. The annotations give, in many instances, the distribution of species of local occurrence in the State in considerable detail, in addition to the usual notes on the 'manner of occurrence,' dates of migration, etc. An elaborate index, giving refer-

ences to the plants and animals as well as to the birds, fittingly closes this excellent paper. — J. A. A.

Todd's Birds of Erie, Pa.[1] — The field covered by the present list is limited to the 'Peninsula,' or Presque Isle, Presque Isle Bay, and the lake shore plain and its environs within about four miles of the city of Erie, or an area about six miles long and four miles wide. It is based primarily on observations and collections made by Mr. Todd, assisted by Mr. W. W. Worthington, during the periods March 21–May 31, and August 20–November 20, 1900, in the interest of the Carnegie Museum at Pittsburgh, Pa., the collections numbering nearly one thousand specimens, and on notes and collections made by Mr. Todd during several previous and subsequent visits to the locality. The notes of other observers are also used, as those of Mr. Ralph B. Simpson and others, on the birds of Erie, and also the collections made here during a number of years by the late George B. Sennett. There is thus a good basis for the exposition of the bird fauna of this interesting locality, which Mr. Todd appears to have fully utilized. An introduction of nearly twenty pages deals with the geographical position and physical features of the locality, and with the general character of the avifauna, and a summary of the manner of occurrence of the 237 species thus far recorded from this limited area. Then follows a very fully annotated list of the species, numbered consecutively from 1 to 237, with the inclusion, in smaller type and unnumbered, some 50 species that may be considered as of probable occurrence, with references to their nearest records of capture. Of the 237 species of known occurrence, 18 are classed as permanent residents, 88 as summer residents, 25 as winter visitants, 95 as transient visitants, 11 as accidental visitants. There is a map of the locality, and three half-tone plates, giving views of characteristic portions.

The list as a whole shows careful, detailed, and conscientious work, and thus adds another to the number of critical local lists, whose value as an accurate record of present conditions will only increase with the lapse of time. — J. A. A.

Hartert's 'Die Vögel der Paläarktischen Fauna.' — Part II[2] of this excellent and invaluable work has recently appeared, completing the

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[1] The Birds of Erie and Presque Isle, Erie County, Pennsylvania. By W. E. Clyde Todd. Annals of the Carnegie Museum, Vol. II, 1904, pp. 481–596, pll, xvi–xix. August 1, 1904.

[2] Die Vögel | der paläarktischen Fauna. | Systematische Uebersicht | der | in Europa, Nord Asien und der Mittelmeerregion | vorkommenden Vögel. | Von | Dr. Ernst Hartert | Heft II. | Seite 113–240. | Mit 22 Abbildungen. | — | Berlin. | Verlag von R. Friedländer und Sohn. | Ausgegeben im Juni 1904.

Fringillidæ and covering part of the Alaudidæ, comprising the species numbered 185 to 394. It well merits the high praise accorded Part I, already noticed,[1] maintaining of course the same characteristics as regards scope and method of treatment. The present brochure includes 80 species and 130 additional subspecies, of which 20 of the latter are described as new, and many others are indicated as new and given consecutive numbers but are not formally named. As the number of forms treated is 210, about ten per cent of the whole are characterized as new. Of the genus *Loxia* three species are recognized, with eight additional subspecies, exclusive of four North American forms mentioned in footnotes, making fifteen recognized forms in all. These include three new subspecies of the *L. curvirostra* group,—one from Spain, one from Scotland, and another from England. In place of *L. curvirostra minor* for the common Red Crossbill of northeastern North America Mr. Hartert adopts *L. curvirostra americana* (Wilson, 1811), *americana* Wilson having forty-two years' priority over *minor* Brehm (1853); but a previous *Loxia americana* (Gmelin 1789) renders Wilson's name untenable.

In the account of the Alaudidæ *Otocoris* is not yet reached, but in some of the other genera of the family there is a striking array of subspecies, *Galerida cristata* having twenty-one (plus three doubtful), and *G. theklæ* eight, and a number of other species of the family have each six to eight or more, indicating the unusual plasticity of the family.—J. A. A.

Kirtland's Warbler.—Two papers have recently appeared dealing with this rare warbler, one of which, by Prof. Charles C. Adams,[2] treats of its migration route, the other, by Mr. Norman A. Wood,[3] of its breeding area. As stated by Mr. Adams: "During the past year more has been added to our knowledge of this bird than during all of the preceding fifty-three years which have elapsed since its discovery." Mr. Adams confines his paper to a consideration of the spring migration records, the species wintering in the Bahamas and breeding in northern Michigan. Dr. L. Stejneger is quoted on the importance of determining the route of this warbler, and the light its discovery would throw upon the problem of "the road by which in past ages part of our fauna entered their present habitat" (Am. Nat., Vol. XXXIII, 1899, p. 68, in a review of Butler's 'Birds of Indiana'). Professor Adams considers first, and at some length, the migration routes and breeding area of the Prothonotary Warbler, taking Louck's paper on this species (Bull. Illinois State Lab. Nat. Hist., IV, 1895, pp. 10–38, and Osprey, II, 1898, pp. 99, 111, 129,) as the basis of

[1] For notice of Part I, see Auk XXI, 1904, pp. 94, 95.

[2] The Migration Route of Kirtland's Warbler. By Chas. C. Adams. Bull. Michigan Orn. Club, Vol. V, pp. 14–21, March, 1904.

[3] Discovery of the Breeding Area of Kirtland's Warbler. By Norman A. Wood. Bull. Michigan Orn. Club, Vol. V, pp. 3–13, March, 1904.

comparison, and the map of the breeding area here given is an adaptation of Louck's map. "The map of the breeding area is," he says, "also a map showing the path of the spring migration, and also, in all probability, the path by which the species has found its way to its present breeding area since the Ice Age." He then compares the distribution of Kirtland's Warbler with that of the Prothonotary, presenting a similar map of its migration records, from about the mouth of the Ohio River northward. He finds that the birds on leaving the Bahamas reach Florida and South Carolina during the latter half of April and early part of May, and assumes that they pass west by way of the Pine Barrens to the Mississippi; they occur in the Mississippi and Ohio drainage basins during May, reaching their breeding grounds in Oscoda and Crawford Counties, Michigan, early in June. He is, however, unable to "understand the South Carolina records." As the extreme east and west records are respectively Toronto and Minneapolis, "it suggests that the breeding area may be extensive." He adds a map showing "lines of glacial drainage or shore lines, to show the relations of those topographic features to bird migration routes." If Kirtland's Warbler was one of the "early species to push north, it is but natural that it should follow such highways, as it is along such valleys and shore lines, at that time, that the vegetation would make its most rapid extension northward." The latter part of the paper is thus suggestive, but adds little in the way of positive information.

Mr. Wood relates in detail his experiences in pursuit of the breeding place of this warbler, his discovery of its haunts, and the long and careful search for its nest, finally rewarded by the discovery of two nests, one of which, found July 8, contained a perfect egg and two young birds about ten days old; the other nest, found July 9, contained five young, also about ten days old. An attempt to rear the young naturally failed. Five adult males and three adult females were taken, in addition to the nests, egg, and seven nestlings. The song and the habits of the birds as observed in their breeding haunts are minutely described, and descriptions and half-tone illustrations are given of the egg and nests, of the sites where the nests were found, and of the mounted group of these birds now in the Museum of the University of Michigan, prepared by Mr. Wood from the materials obtained on this expedition. Although preliminary notices of these discoveries have been published, this paper forms the most important contribution thus far made to the history of the species, which is at last removed from the small list of North American birds whose nests and eggs and breeding habits still remain unknown. — J. A. A.

Forbush on the Destruction of Birds by the Elements.[1] — After some

[1] The Destruction of Birds by the Elements in 1903–04. Special Report. By Edward Howe Forbush, Ornithologist to the State Board of Agriculture. Fifty-first Ann. Rep. Massachusetts State Board of Agriculture, pp. 457–503.

general statements about the destruction of birds by the elements Mr. Forbush gives the results of his investigations in relation to the effect of the remarkable weather of May and June, 1903, upon bird life in Massachusetts and adjoining States. An almost unprecedented drought prevailed from the middle of April till the 6th of June, followed by three weeks of almost unparalleled rainfall, with periods of excessively low temperature. The scarcity of insects due to the drought appears to have been responsible for the starvation of the young of many insectivorous birds, and apparently also of some of the old birds. But the abnormal and severe weather of June proved far more disastrous. The heavy storms blew down many of the nests, with their eggs or young, of the tree-nesting species, while ground- and bush-nesting species had their nests submerged or so drenched with rain as to cause the complete destruction of their contents or their desertion by the parent birds. The inundation of low-lying lands, and the rise of streams and ponds, drowned out or destroyed not only the nests of marsh-breeding birds, but those of blackbirds and sparrows, of various species, at many localities where their nests became submerged, while the cold rains often destroyed the young birds where the nesting-sites were above the reach of the floods, and in many instances the parent birds seem to have succumbed to the inclemency of the weather. While these conditions were fortunately not general throughout the State, they occurred at so many localities that the effect was disastrous to bird life. The swallows and swifts appear to have been the worst sufferers, the old birds, as well as the young, dying at some localities in vast numbers from cold and starvation, owing to the absence of insect food directly caused by the severe weather conditions. The almost complete extinction of whole colonies of Martins, Tree Swallows, Barn Swallows, and Chimney Swifts is recorded from several localities within the storm areas of heaviest precipitation.

The winter following this unfavorable summer — that of 1903–04 — proved of almost unequalled severity in New England. January was one of the severest months on record in eastern Massachusetts, both for lowness of temperature and amount of snowfall, and February was almost equally severe. According to Mr. Forbush's observations at Wareham and elsewhere in the State, the birds suffered greatly from the intense cold, and many evidently perished. While, for obvious reasons, not many dead birds were found, there was gradually a great reduction in their numbers at many localities, and it is believed by Mr. Forbush, and by other observers quoted by him, that the birds died, in some cases from the excessive cold, in others from lack of food. Crows, and perhaps certain individuals of other species, appear to have left the colder portions of New England for more southern points.

Mr. Forbush closes his sadly interesting report with some suggestions as to the measures that may be taken for protecting birds and increasing their numbers, especially through providing them with food and shelter during winter, and in checking their illegal slaughter. The author has

expended a great deal of time and labor in bringing together the facts here presented, which he has secured in large part through the issue of circulars to some two hundred correspondents requesting information on the points at issue. — J. A. A.

Judd's 'The Economic Value of the Bobwhite.' — In a paper of about ten pages Dr. Judd[1] treats of the economic value of the Bobwhite (*Colinus virginianus*) as (1) a weed and insect destroyer, (2) an article of food, (3) an object of sport. The food report is based on field observations and an examination of 801 stomachs, collected in every month of the year and over a wide extent of country — from Canada to Florida and Texas. The Bobwhite is found to be preëminently a seed-eater, over fifty per cent of its food consisting of seeds, of which the seeds of weeds constitute the bulk. On a very conservative basis "the total consumption of weed seed by Bobwhites from September 1 to April 30 in Virginia amounts to 573 tons." From May to August nearly one third of the Bobwhite's food is found to be insects, which is made up largely of such injurious species as the potato beetle, cucumber beetle, squash bugs, chinch bugs, cotton-boll weevils, various kinds of destructive caterpillars, grasshoppers, etc. It eats very little grain, and this is mainly gathered from stubble fields, and it never, apparently, destroys sprouting grain, like the Crow, various Blackbirds, etc., nor is it, like the Ruffed Grouse, destructive to any harmful extent to leaves and buds. The importance of the Bobwhite as an article of food, and also as an object of sport, is dwelt upon at some length, and it is pointed out that it is possible for farmers to derive a considerable revenue from sportsmen by promoting its increase for purposes of sport. "It is believed," he says, "that if suitably managed, some farms of from 500 to 1000 acres would yield a better revenue from Bobwhites than from poultry." More stringent and more uniform legal provision is recommended for its preservation and increase. The paper closes with a list of seeds, fruits, insects, etc., eaten by the Bobwhite, and is illustrated by a colored plate, by Fuertes, of a Bobwhite in a potato field catching potato beetles. The utility of the Bobwhite as a weed destroyer is especially emphasized. — J. A. A.

Elrod on Birds in Relation to Agriculture. — In this paper of some twenty pages, illustrated with several plates of representative birds, Professor Elrod[2] summarizes some of the results of recent investigations of

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[1] The Economic Value of the Bobwhite. By Sylvester D. Judd, Ph. D., Assistant in Ornithology. Yearbook of Depart. of Agriculture for 1903, pp. 193–204, pl. xvi.

[2] The Relation of Birds to Agriculture. By Morton J. Elrod, University of Montana. Second Ann. Rep. Montana State Board of Farmers' Institutes, pp. 173–190, with 8 pll. University of Montana, Missoula, Mont., 1904.

the food of birds, with special reference to the importance of better protection for birds in the State of Montana. A useful list of the principal recent publications on economic ornithology is appended as a partial bibliography of the subject. This timely paper should be of great interest and service to the farmers and fruit-growers of Montana. — J. A. A.

NOTES AND NEWS.

Mr. John Fannin, a Member of the American Ornithologists' Union, died at his home at Victoria, British Columbia, June 20, 1904. From 'Forest and Stream' (issue of July 9, 1904) we learn that "Mr. Fannin was born in the backwoods of Kempville, Ontario, where he passed his boyhood." In 1862, attracted by the news of the discovery of gold in the Caribou district of British Columbia, he joined a party of miners "which proposed to make on foot the journey across the great plains and the Rocky Mountains to the Pacific Coast." The party set out from Fort Garry (now Winnipeg), then a frontier settlement, and after four months of difficulties and hardships reached the Fraser River. For nearly ten years he prospected and mined in different parts of the Province, finding himself as poor financially at the end of the period as when he begun, but with a wealth of useful experience, and an intimate acquaintance with the country, later utilized in the service of the Canadian Government. About twenty-five years ago he settled on the banks of Burrard Inlet, near the present town of New Westminster. "Mr. Fannin had always had a deep love for nature, and here he settled down and began its systematic study, though at first with little knowledge and almost without books. Here .... without assistance, he taught himself most of the birds and mammals of the region.... As time went on, his fame as a naturalist spread throughout British Columbia, and when, about sixteen years ago, the Provincial Museum was established at Victoria, Mr. Fannin was made its curator.... His services were heartily appreciated by the Government, which in 1895 sent him to Europe and to the United States to study the workings of modern museums." He unselfishly and unceasingly devoted his time and strength to the increase and arrangement of the collections under his charge. His principal contribution to ornithological literature is his 'Check List of British Columbia Birds,' published at Victoria, B. C., in 1891 (*cf.* Auk, IX, 1892, p. 65). He also contributed a few notes on British Columbia birds to 'The Auk,' and was a correspondent of 'Forest and Stream,' and other natural history journals. He was elected an Associate of the A. O. U. in 1888, and a member in 1901.

Mr. James Mortimer Southwick, an Associate of the American Ornithologists' Union, died at his home in Providence, R. I., June 3, 1904, at the age of 58 years, having been born in Newburyport, Mass., July 10, 1846. He was educated in the public schools of that place, and at the age of sixteen went to Providence, where for many years he was in the dry goods business. In 1883 he started a natural history business, in company with Mr. Fred T. Jencks, under the well-known firm name of Southwick and Jencks, and later, on the retirement of Mr. Jencks, continued the business for some time alone. In connection with the sale of natural history books and specimens, the firm published a monthly journal entitled 'Random Notes on Natural History' (3 vols., 1884–86), which contained many important notes and articles, relating largely to the natural history of Rhode Island, many of them contributed by authors who are now well-known specialists in their respective lines of study. In 1896 he disposed of his natural history business to accept the position of Curator of the Natural History Museum at Roger Williams Park, Providence, R. I., which position he held at the time of his death. As Curator he worked indefatigably, and at times against great discouragements. He succeeded, however, in bringing together a nearly complete collection of the birds of Rhode Island, which in installation and arrangement, including labeling, is a model that may well be followed in other local museums. The results here shown are due to his own untiring efforts and to his earnest solicitations in behalf of the museum. At the time of his death he was Vice-President of the Rhode Island Audubon Society and of the Franklin Society of Providence. He was Bate Entomologist for several years, and was for two years Secretary of the Tree Protection Society, and a member of the Horticultural Society. He was the first to discover the presence of the Gypsy moth in Providence, and did much to aid in the extermination of this and such other destructive insect pests as the elm leaf beetle and the San José scale insect from the city in which he lived.

It was his endeavor to make the museum a means of useful instruction to the public, and he often gave lectures on natural history subjects in his own and neighboring cities, and greatly assisted the teachers of nature study in the public schools. His ornithological publications are not extensive, consisting of various notes on the rarer birds of Rhode Island. From early life his interest in natural history was intense, and he has left in the Roger Williams Park Museum an enduring record of conscientious work.

Articles of incorporation have just been drawn looking to the establishment on a permanent foundation of the 'Worthington Society for the Investigation of Bird Life.' The founder, Mr. Charles C. Worthington, will erect and endow, on his estate at Shawnee, Monroe County, Pennsylvania, the necessary buildings and equipment.

The Worthington Society will have for its purpose the consideration

of bird life as it is found in nature, and will also have many birds under confinement for study and experiment.

The following is a summary of the chief topics that will present an immediate field for experimentation.

I. The study and consideration of a bird as an individual. It is believed that by means of observation carried through the entire life of the individual, with a daily record, brief or elaborate, as exigencies may require, much will be learned regarding matters that are now obscure. Facts, such as growth, habits, health, temper, etc. will be daily reported.

II. The study of the occurrence, extent, nature and cause of variations in different representatives of the same species.

III. Changes in color and appearance correlating with age, sex and season.

IV. Changes in color and appearance due to light, heat, presence or absence of moisture, and to food. How rapid a change in appearance can be affected by a new environment or a new set of conditions?

V. Heredity. What general characteristics are transmitted? Are acquired characteristics transmitted? The consideration of atavism, prepotency and telegony.

VI. Experiments in breeding. Hybridity and the fertility of hybrids. The possibility of establishing a new physiological species.

VII. Experiments in change of color due to moult.

VIII. Adaptability. The plasticity of animals. How great a factor is this in domesticating new kinds of animals?

IX. The leisure of animals. How is this acquired? Being acquired, how is this employed?

X. Instinct, habit, and the development of intelligence.

XI. The possibility of breeding insectivorous and other beneficial kinds of birds to re-stock a given region or to increase native birds, as has been done in the case of fish, by the United States Fish Commission.

A temporary laboratory and aviary is being equipped, and preliminary work will begin with the installment of a large number of native and foreign birds early in September. Mr. Worthington has procured the services of Mr. William E. D. Scott, Curator of the Department of Ornithology at Princeton University, as Director of the proposed work. Mr. Bruce Horsfall has been engaged as chief assistant and artist.

THE TWENTY-SECOND ANNUAL CONGRESS of the American Ornithologists' Union will be held in Cambridge, Mass., beginning on the evening of Monday, November 28, 1904. The evening session will be for the election of officers and members and for the transaction of routine business. Tuesday and the following days the sessions will be for the presentation and discussion of scientific papers, and will be open to the public. Members intending to present communications are requested to forward the titles of their papers to the Secretary, Mr. John H. Sage, Portland, Conn., so as to reach him not later than November 25.

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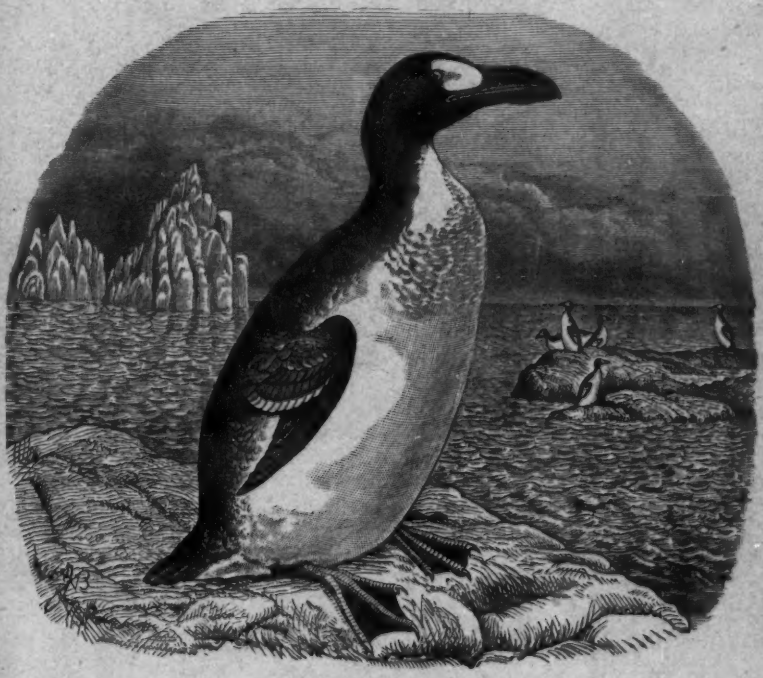

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Publications Received (*continued*).

American Ornithology, IV, July–Sept., 1904.
Anales del Mus. Nac. de Montevideo, Ser. 2, Ent. 1, 1904.
Annals of Scottish Natural History, July, 1904.
Avicultural Magazine, N. S., II, July–Sept., 1904.
Bird-Lore, VI, No. 4, July–Aug., 1904.
Birds and Nature, XVI, No. 1, Sept., 1904.
Bulletin British Orn. Club, No. CVIII, June, 1904.
Bulletin Michigan Orn. Club, V, June, 1904.
Condor, The, VI, Nos. 4, 5, 1904.
Emu, The, IV, July, 1904.
Forest and Stream, LXIII, Nos. 1–13, 1904.
International Catalogue of Scientific Literature, First Ann. Issue, Vol. N, Zoölogy, Feb., 1904.
Knowledge, N. S., I, Nos. July–Sept., 1904.
Monthly Bulletin, Division Zoölogy, Penn. Dept. Agric., II, Nos. 3–5, July–Sept., 1904.
Naturalist, The, a Month. Journ. Nat. Hist. for North of England, Nos. 569–572, June–Sept., 1904.
Ornithologisches Jahrbuch, XV, Heft 4, July–Aug., 1904.
Ornithologische Monatsberichte, XII, July–Sept., 1904.
Ornithologische Monatsschrift, XXIX, Nos. 5–8, May–Aug., 1904.
Ottawa Naturalist, XVIII, Nos. 3–6, June–Sept., 1904.
Our Animal Friends, XXXI, No. 1, XXXII, Nos. 1, 2, July–Sept., 1904.
Science, N. S., XX, Nos. 496–508, 1904.
Warbler, The, II, Nos. 4, 5, 1904.
Wilson Bulletin, XI, No. 3, Sept., 1904.
Zoölogical Quarterly Bulletin, Penn. Dept. Agric., II, No. 1, May 15, 1904.
Zoölogist, The, (4) VIII, Nos. 90–92, June–Aug., 1904.

PUBLICATIONS RECEIVED.

Allen, Glover M. A List of the Birds of New Hampshire. (Proc. Manchester Inst. Arts and Sciences, IV, pt. 1, 1902 (1903=1904), pp. 23–222.)

Bryan, Wm. Alanson. A Monograph of Marcus Island. (Occas. Papers Bernice Pauahi Bishop Museum, II, No. 1, 1903.)

Cooke, Wells W. Some New Facts about the Migration of Birds. (Yearbook U. S. Dept. Agric. for 1903, pp. 371–386.)

Dubois, Alphonse. Synopsis Avium, Fasc. XVI and XVII, 1904 (completing the work).

Elrod, Morton J. Birds in their Relation to Agriculture. (Second Ann. Rep. Montana State Board of Farmers' Institutes, pp. 173–190, 8 pll.)

Fisher, Walter K. The Home Life of a Buccaneer [Man-o'-War Bird]. (Condor, VI, May, 1904.)

Forbush, Edward Howe. The Destruction of Birds by the Elements in 1903–04. (Fifty-first Ann. Rep. Massachusetts State Board of Agric., pp. 457–503.)

Judd, Sylvester D. The Economic Value of the Bobwhite. (Yearbook U. S. Dept. Agric. for 1903, pp. 193–204.)

Hartert, Ernst. Die Vögel der paläarktischen Fauna, Heft 2, June, 1904.

Kellogg, Vernon L. Two New Genera of Mallophaga. (Biolog. Bull., V, July, 1903.)

Kellogg, Vernon L., and B. L. Chapman. Mallophaga from Birds of the Hawaiian Islands. (Journ. New York Ent. Soc., X, Sept., 1902.)

McGregor, Richard C. The Birds of Calayan and Fuga, Babuyan Group. (Bull. Philippine Mus., No. 4, May, 1904.)

Madarász, Julius von. An Extraordinary Discovery in Ornithology. (Ann. Mus. Nat. Hungarici, II, 1904, 396–398, June, 1904.)

Merriam, C. Hart. Report of the Chief of the Biological Survey for 1903. (Yearbook U. S. Dept. Agric. for 1903, pp. 483–495.)

Meyer, A. B. Vögel von Südost Celébes. (Notes from Leyden Mus., XXIV, pp. 232–235.)

Palmer, T. S. Directory of State Officials and Organizations concerned with the Protection of Birds and Game, 1904. (Biological Survey Circular No. 44, Aug. 24, 1904.)

Scott, William E. D. (1) The Inheritance of Song in Passerine Birds. (Science, N. S., XX, No. 504, Aug. 26, 1904.) (2) Princeton University Exped. to Patagonia, 1896–1899, Vol. II, Ornithology, pt. I, 1904.

Todd, W. E. Clyde. The Birds of Erie and Presque Isle, Erie Co., Pa. (Ann. Carnegie Mus., II, 1904, pp. 481–596, 4 pll.)

Tschusi zu Schmidhoffen, Vikt. Ritter von. Ueber palæarktische Formen. VII, *Corvus cornix valachus* subsp. nov. (Orn. Jahrb., XV, 1904. Heft 4.)

Wilson, James. Regulations for the Protection of Game in Alaska for the year 1904. (Biological Survey Circular No. 42.)

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